

THE MOTOR AGE

THE AUTOMOBILE AUTHORITY OF AMERICA

VOL. III.

CHICAGO, NOVEMBER 8, 1900.

NO. 9.

ENTERED AT THE CHICAGO POST OFFICE AS SECOND-CLASS MATTER.

THE MOTOR AGE is published every Thursday by THE CYCLE AGE COMPANY, at 324 Dearborn St., Chicago.
Eastern Office: 1426 and 1427 American Tract Society Building, 150 Nassau Street, New York City.
Subscription price in the United States, Canada, and Mexico, \$2.00 per year; foreign countries (in postal union), \$4.00 per year, payable invariably in advance.
Advertising rates on application. Copy for changes in advertisements must be in hand the Friday previous to publication to insure insertion.

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NEW YORK AUTOMOBILE EXHIBITION

THE SHOW OPENS IN A STATE OF SURPRISING COMPLETENESS—GREAT INTEREST DISPLAYED BY SOCIETY PEOPLE—WHAT WAS TO BE SEEN

New York, Nov. 5.—Never did the opening day of a bicycle or automobile show develop a more pleasing surprise than Saturday's commencement of the Madison Square Garden automobile exhibition under the direction of the Automobile Club of America. The morning's work of completing exhibitors' and managers' preparations for the reception of the public began in an exceedingly disagreeable and steadily accelerating drizzle

which seemed to foretell the rainy opening night characteristic of previous similar exhibitions; and when the day's task was well under way its immensity created doubts in the minds of even the most optimistic as to the ability of the workers to get the garden in fit trim for the evening visitors.

When night-time came, however, and the mammoth Republican parade which had marched over slippery streets all day

to the tune of the umbrella vender's two-step was disbanded and gone to supper, the clouds ceased their leakage, the street dried, people came out and by half-past eight nearly two thousand experienced and inexperienced friends of the motor-vehicle were in the garden. What they saw was not a half completed exhibition which the condition of affairs in the morning prophesied but one of the most attractive displays thus far recorded in the minutes of the motor industry. Considering the backward state of the preparations in the morning the day's work accomplished results which brought out universal comments of surprise and satisfaction from those directly interested. This phase of the show being one which was not appreciated by general public, the expressions of pleasure manifested by it was ample demonstration that the final arrangements had not only been done with vim but well done also.

An Attractive Display

The general view of the main floor presented that array of color and grouping which gains favor with the onlooker; it brought out all of the spectacular brightness typical of Madison Square Garden exhibitions, rendered more striking in pictorial effect by the absence on the floor of the multitude of small displays of small objects which gave the bicycle shows of the past a look of cheerful inebriety when viewed as a whole.

An Object Lesson

The eye's interest was carried to the red-white-and-blue draped balconies by unique decorations in the form of large reproductions of the emblem of the Automobile Club of America plentifully displayed along the continuous festoons of bunting. But more striking than the vision itself—which, after all, merely pleased the eye—was its educational effect. To even an uninitiated visitor stepping from the entrance to a position commanding a fair view of the main floor, the exhibit presented an object lesson, learned in a trice, concerning the wideness of the motor-vehicle field, the diversity of its branches, even at this early stage of its progress, and the unmeasured possibilities in the way of novel construc-

tion and broadening utility. It did not require one skilled in the art or familiar with the sport, to pick out the keynote of the industry, or to readily conjure day dreams concerning eventual ramifications of the motor scope into all the avenues of business and pleasure; for, there, within the vision of all, was the complete story told in many chapters, with each chapter of a different color and size and for a different purpose.

Very Complete

The exhibition doubtlessly furnished the nearest complete collection of modern automobiles of different types and patterns that has ever been brought before public notice of this country, at one time in one place. The three standard types of vehicles (steam, gasoline and electric) were each well represented in numbers, and in patterns of each type the machines graded from the lightest to the heaviest which have yet been built.

The club committee in charge of the exhibition was sadly crippled at the opening of the show by the retirement from active work of President Shattuck on account of the death of his father-in-law, former Mayor W. I. Strong. The preparations had been left in such good shape, however, that the other members of the committee, among whom E. E. Schwarzkopf proved himself to be a very energetic worker, were able to carry them out successfully.

Excellent Arrangement

The arrangement of the garden was excellent. Around the main floor a track about twenty feet wide and slightly banked on the turns had been laid. The space within this was given over to the main exhibit. One side and end of the first balcony was devoted to the displays of manufacturers of parts and accessories, and of other exhibitors not requiring any great amount of floor space. The large room at the left of the main entrance, usually devoted to purposes of a cafe and restaurant, was filled with exhibits of automobile manufacturers and a display of motor-vehicle relics collected by the automobile club. On account of the small size of the track and its low banking speeding upon it was prohibited,

it being devoted entirely to the showing off of the various vehicles and to obstacle contests which have been arranged for the afternoon and evening programs of the week.

The Opening Day

Saturday's business was entirely that of letting the visitors to the exhibition see the different automobiles, ride in those run on the track and become acquainted with the manufacturers. No program of obstacle contests was given. That persons of all classes of society, mechanical, professional and lay, find entertainment and profit in examining automobiles, asking questions concerning them, comparing one with another and getting their money's worth without the sporting or competitive element forming a part of their visit to the show, is manifested by the fact that practically all of those who came early spent the entire evening in the garden, although, to be sure, the show's patronage changed its individual personality to a certain extent in the course of the evening and this coming and going of visitors helped to swell the entire attendance to a figure well above that guessed by surveying the crowd gathered in the building at one time.

A Popular Night

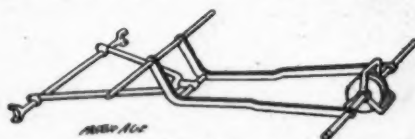
The opening night was strictly a popular affair, for, with the exception of those in charge of the exhibits, the number of trades people present was not large. It might be said that it was a show in the interest of automobilism rather than one for the progress of automobile manufacture. It is probable, however, that during the week many persons interested in the trade will be visitors to the show and that the exhibiting manufacturers will meet dealers and prospective dealers in such vehicles. The character of the questions asked of the manufacturers tonight clearly showed that the trade element was missing; queries related almost exclusively to such general questions concerning kind of motive power, cost of vehicle, speed obtainable, etc., as the prospective user of an automobile is likely to venture in his first search for practical information

On the main floor were many of the well known and well advertised manufacturers of automobiles and the spaces occupied by most of them were large, tastily decorated and interesting because of the variety of patterns displayed. The ornamental features were, almost without exception, of the kind calculated to create an impression of substantiability. The gaudy and trivial trimmings of some exhibitions were absent.

In addition to the machines exhibited on the main floor and in the annex, nearly every one of the exhibitors had one or more additional machines for showing-off purposes on the track.

Waltham Mfg. Co.

A large corner space next to the track contained a full line of Orient motorcycles of the latest construction. There was the Orient motor bicycle distinctively finished with black frame and tanks and red forks and rims, two regular pattern tricycles with single motors, two quads, or Autogos, having front seats for additional passengers, and the double motor tricycle on which Albert Champion accomplished several remarkable rides at the Inter Ocean tournament in Chicago and upon other more recent occasions. The central feature of this exhibit, however, was the Orient gasoline runabout, brand new in design and manufacture. It was also one of the especially inter-



Orient Victorlette Frame.

esting vehicles of the entire exhibition because in general appearance it possesses the simplicity of an electric machine. Manager Gash seemed particularly glad of his task when engaged in pointing out the characteristic merits of this newest Waltham product. The running gear is simple and provides a hinged spring support for the motor and driving gear. The accompanying illustration shows its construction. From the front axle tree runs backward a V-shaped frame of tubing having at its rear

end a horizontal pin pivoting within a journal formed in the cross bar of the forward end of the rear frame. This rear frame comprises two flat steel bars which are hinged at their forward extremities to a cross tube secured to the under side of vehicle body floor near its center. From these hinged ends the bars run parallel, downward and backward to the point of location of the cross brace to which the front frame is swiveled. They are bent to assume horizontal positions and run backward parallel for a sufficient distance to allow the accommodation of the crank box of the vertically disposed motor and the incased transmission gearing between them. The bars then incline away from each other slightly and run to the rear axle to which they are secured on either side of the double Y-shaped differential frame.

The steering is accomplished by a vertical post with revolving hand lever, located on the outside of the carriage body. The steering knuckle connection rod is operated by a rack formed on its rear end and engaging a pinion on the bottom of the steering post. The steering post also carries the variable speed gear operating handles, through which two speeds forward and one backward may be obtained, in addition to the variations possible by timing the ignition. The motor shaft extension for the application of the starting crank is readily accessible on the side of the body and the motor and spark regulating handles are mounted on the steering post in close proximity to the transmission gear handles.

Stanley Mfg. Co.

While three McKay steam road wagons occupied the greater share of the floor space in the exhibit of the Stanley Mfg. Co. of Boston, Mass., whose factory is at Lawrence, the most interesting feature was comprised by two McKay steam engines on solid stands, one of them being run for the edification and instruction of the sight-seers. This engine being the production of a man long experienced in the construction and operation of high-class stationary engines, shows many evidences of forethought in design and care in workmanship. A small

but not unimportant point is the metal packing at all joints, rendering attention to these parts unnecessary except at long periods. The two most distinctive items in the construction of this engine are the aluminum, oil-tight casing in which the rotary parts of the engine run, and the compound cylinders with cut-off attachment. The former item is a provision against rusting or unsatisfactory working as it allows all of the rotary parts to be run constantly in oil. The compound feature is unique because it is so arranged that in ordinary driving the engine can be run as a regular compound engine, and, when extra power for hill climbing or excessive speed is desired, live steam can be turned into both cylinders. The cut-off valve works instantaneously. The company is conservative and fair in its claims for the engine, making no pretense that it will run continuously with a full head of steam turned on but merely saying that such is a practical impossibility with any engine and boiler of the kind, but that, for high power runs of limited duration, the direct admission offers facilities for getting there not obtainable with the ordinary compound engines.

Autocar Co.

Under a huge blue and white sign bearing the words "Autocar Company" in letters almost identical to those used for the title of the English motor-vehicle journal of the same name, the Philadelphia company exhibits three, gasolene machines, the most attractive in appearance of which is a low-down dos-a-dos vehicle of natty design. The Autocar company's vehicles are driven by two-cylinder motors of the balanced type, water cooled and having a specially made vibrating sparker. The fuel feed to both cylinders is through a single pipe running longitudinally across the entire top of the engine and uniting at its center with the main feed pipe.

Foster and Wannamaker

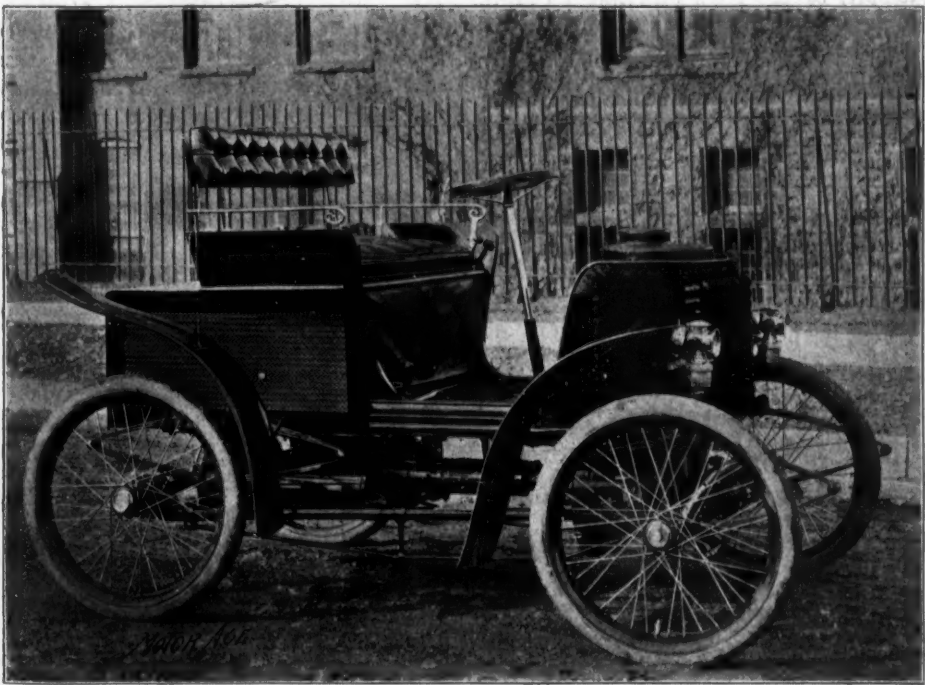
The Foster Automobile Mfg. Co. of Rochester, N. Y., exhibits in conjunction with its eastern agent, John Wanamaker. The display presents little in the way of mechanical novelty, being devoted

to the presentation of Foster steam vehicles of standard commercial patterns. These are shown in stanhope, surrey, delivery and brake styles. The Shipman steam engine furnishes the motive power for all models.

American Bicycle Co.

The motor-vehicle productions of four factories are shown in the spacious display of the American Bicycle Co., and all three kinds of motive power are in evidence. Two G. & J. gasolene vehicles, five Waverly electrics in four styles and

The Billings wagon was built in the old Lozier bicycle factory at Toledo and Manager Mudge, in charge of the exhibit, says that "it can go at a thirty-five-mile an hour clip without turning a hair." In general appearance it does not differ materially from other standard patterns of steam vehicles, and is very handsomely finished in plain black the side and rear panels, which are of cast aluminum enameled to match the rest of the body, having relief scroll ornamentation in the place of the customary colored slat work.



THE ELECTRIC VEHICLE CO.'S GASOLENE VEHICLE.

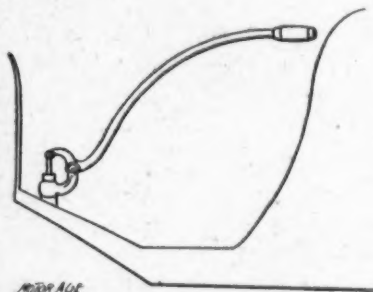
sizes, the Cleveland tricycle of French type, and the Lawson three wheeled "gyrascope," or "trimotor," built by the Western Wheel Works factory recall to mind the very similar exhibit of the trust at the recent Chicago exhibition. Novelty is added to the display, however, by the newly completed Billings steam run-about, the machine originated by members of the drop forging firm of Billings & Spencer of Hartford, Conn., from whom the A. B. C. purchased the patent rights.

The engine used is a trifle larger than usual, the cylinders being $3\frac{1}{4}$ by $4\frac{1}{2}$ inches. The boiler is of an original water tube construction and the principal claim made for it is that the dread corrosion is practically impossible in it. The claim is made for $6\frac{1}{4}$ indicated horsepower. One of the unique features of the vehicle is a novelty in the line of an auxiliary hand water pump operated by the steering lever. This is shown in the illustration herewith. Within the steering standard is a small pump connecting with

the water tank and having a plunger pivoted to an extension from the hinged steering lever. Should the automatic water pump fail in its duty or any other contingency make necessary the supplying of water to the boiler by hand the driver of the vehicle can accomplish the necessary pumping by raising and lowering the handle end of the steering lever, and at the same time guide the vehicle.

Riker Motor Vehicle Co.

Two separate displays are made by this enterprising New Jersey firm (which attempts, by the class of vehicles shown, to encourage the idea that motor-vehicles are not merely toys for the edification and sport of rich people but practical conveyances for every-day use in competition with all styles of horse-drawn vehicles. In one of the exhibits are seen heavy wagons only, and, (as they are exact duplicates of vehicles which the Riker company has already put into com-



Lever of A. B. C. Co.'s Steam Vehicle.

mon use in New York city, they furnish excellent proof of the rapidity with which the commercial world is grasping the automobile problem. One is a huge white freight truck, another is a finely finished hospital ambulance which would furnish a delightful conveyance to the human repair shop for the unfortunate pedestrian who failed to keep out of the way of the recklessly driven 24-horsepower Panhard locomotive of A. C. Bostwick, an insurance patrol wagon which prophesies the auto fire department, and an electric omnibus of generous proportions.

The other Riker exhibit is devoted to lighter patterns of electric vehicles for city usage. It contains two cabs for livery or private service, two phaetons

such as doctors prefer, a four seated brake, a hansom cab, an omnibus of lighter design than that in the other exhibit, a light delivery wagon and a handsomely equipped victoria.

Strong & Rogers

The Cleveland firm of Strong & Rogers have on the floor one sample of the single style of electric carriage built by them. This vehicle is a spider stanhope driven by Willard batteries and furnished with a single motor whose transmission gear connects with the rear axle immediately inside the right rear wheel. A common differential is placed at the center of the axle. The company build only to order and prefer to devote their energy to the production of a fair number of thoroughly first class machines of this type with elegant finish and trimmings than to the more rapid manufacture of a greater variety. The stanhope has a victoria style top and is furnished with a removable seat on the rear from which the lofty "tiger" may sneer at the common herd which tramps the sidewalks.

Baker Motor Vehicle Co.

The Baker Motor Vehicle Co. of Cleveland shows two steam runabouts. This concern is progressing rapidly along the commercial and mechanical lines mentioned in *The Motor Age* recently. The neat appearance of its vehicles brought forth considerable favorable comment from the many first-night visitors at the show who paid considerable attention to comparing the different styles of light steam wagons exhibited.

DeDion-Bouton Motorette Co.

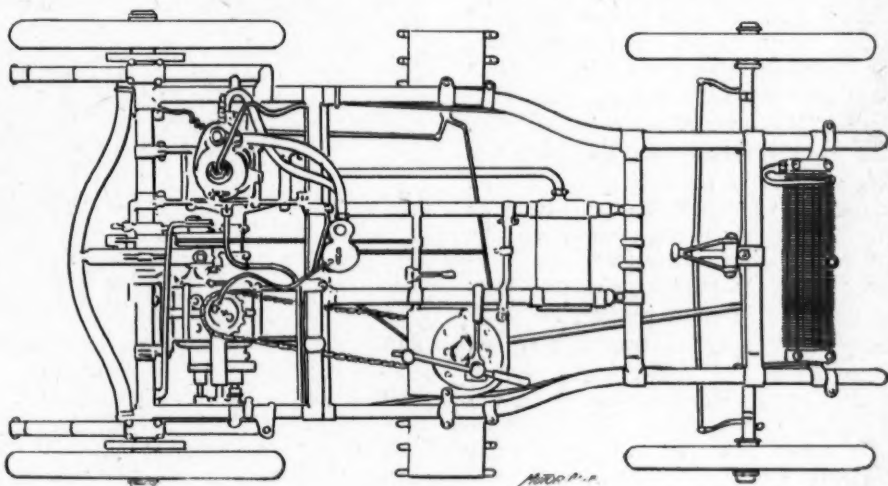
The main talking feature around the display of this Brooklyn company is the statement that its manufacturing operations are along lines which have been given a thorough test on the other side of the Atlantic and that its mechanical contingency is not merely experimenting. Placed close to the aisle, where all who passed might see it was a complete Motorette running gear on wheels, ready for the reception of the body. This low-down running gear, which is shown in top elevation herewith contains many distinctive features in its motor support and arrangement, variable speed mechan-

ism, etc., and is used, practically without alteration in all of the various patterns of Motorettes. To demonstrate its adaptability to different styles of gasoline vehicles there are grouped around it a single-seated vehicle known as the Brooklyn type, one called the New York type, which has two seats facing each other, and an extremely nobby brougham especially adapted for use by doctors and which is unique because of its neat littleness and lowness in comparison with the large electric broughams. The Motorette

words of truth. Eight vehicles were on the floor including several of the well known runabout pattern, a surrey and a Locoracer. On a table was a complete engine attached to a driving gear.

National Automobile & Electric Co.

Electric vehicles for stylish folk comprised the preponderance of the large display of the National Automobile & Electric Co. of Indianapolis, the firm which states that its new factory is not only a big one but erected and equipped especially for the rapid production of motor-



DE DION-BOUTON RUNNING GEAR-PLAN VIEW.

exhibit also presents a De-Dion Bouton tricycle.

Locomobile Co. of America

The display of the Locomobile Co. of America, New York and other points, occupied the central space of the main floor. Large arches bearing impressive signs and capped by jaunty eagles proclaimed to all who entered the garden that the pioneer of steam runabout builders, was not the least among the exhibitors. Having plenty of room the Locomobile company was enabled to show its vehicles without crowding. Visitors to its space had plenty of room in which to study the vehicles from all sides, get down on their knees to scrutinize the running gears and judge for themselves, as far as possible, whether the numerous signs asserting reliability, speed, safety, comfort, etc., were

vehicles in first-class style. There are seven vehicles in the exhibit: two runabouts, a stanhope, a delivery wagon, a light golf dos-a-dos, a stanhope dos-a-dos and a high two-seated brake.

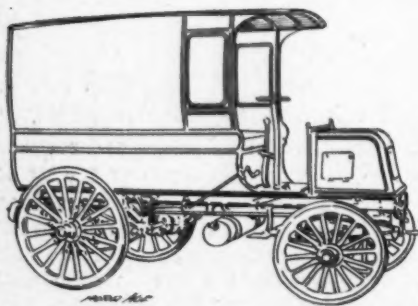
Woods Motor Vehicle Co.

Five handsome electric carriages, in brougham, victoria, hansom and runabout carriages gave the exhibit of the Woods Motor Vehicle Co. of Chicago, the appearance of affluence characteristic of its show displays and impressed on the mind of the visitor the fact that electric vehicles for city use can be made to look extremely stylish if their maker cares to emulate the example of builders of expensive carriages, in the design and finish of the bodies and tops. It was noted by many that the Woods vehicles resembled high-class horse-drawn car-

riages of corresponding types more closely than did those of any other exhibiton at the garden.

Daimler Mfg. Co.

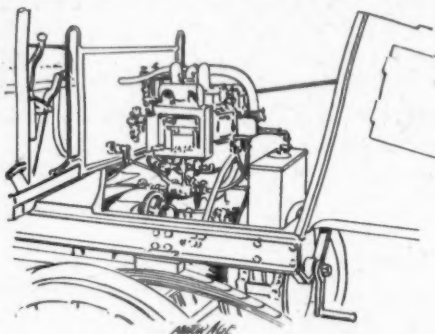
Like the Buffalo concern across the aisle from it the Daimler Mfg. Co. of Long Island City, N. Y., showed both a finished vehicle and one without paint. The position which this firm has taken in the automobile industry is the peculiar one of building heavy vehicles only and thus far its work has been practically limited to the production of covered delivery wagons capable of carrying 4,000 pounds load at a maximum speed of twelve miles per hour. These are probably the largest gasoline vehicles built in this country. Their appearance is unique because of the arrangement of the motor. This is placed ahead of the driver's foot platform and is entirely enclosed in a hinged box which may be lifted to make all of the motor parts accessible. The two motors are placed in an upright position with their joint crank box below the floor and its shaft running longitudinally of the vehicle. On the rear end of the shaft is a fly-wheel recessed to receive a friction clutch member on the transmission shaft running backward to the speed change gear, directly in front of the rear axle differential. The variable speed device is entirely encased, operates by spur gears and furnishes four forward speeds and one reverse. The motors have hot tube ignition. Concern-



Daimler Gasolene Delivery Wagon.

ing this feature Mr. Moffet of the company said that it was used because it was known to be reliable and that he would not commit himself by saying that he thought it was positively better than the

electric ignition or that the electric ignition used by others was not satisfactory; he knew that electric sparking devices missed ignition fairly often and that the hot tube did not miss once in a thousand times and that as long as it was perfectly feasible and practicable to use a hot



Daimler Motor Mechanism.

tube ignition in vehicles of the class built by the Daimler company he believed it wise to stick to the safe side and the successful precedent of the Daimler manufacturers in Europe. The Daimler hot tube flame is neatly hooded in a brass box with closely shutting side doors and safety draft top cap. The flame box with doors open showing the burners, together with the arrangement of other motor parts of the Daimler vehicle is shown in one of the accompanying illustrations, the motor cover box being raised. The complete wagon with motor cover down is shown in the other.

Buffalo Electric Carriage Co.

As an avowal of honest workmanship the Buffalo Electric Carriage Co. of Buffalo, shows, in addition to two finished stanhopes of its standard patterns, a vehicle completely assembled but with all parts bare of finishing enamel, nickel and paint. The fact that this unfinished vehicle attracted considerable attention on a night when most of the visitors belonged to the laity indicated that those who are interested in automobiles from a popular standpoint are at least desirous of learning about their construction even if they do not now know any better than to ask, as one was heard to do, where was the differential gear of an electric vehicle each of whose traction

wheels was driven by an independent motor.

One peculiarity of the Buffalo company's vehicles is that the V-shaped running gear reaches are wooden bars instead of the usual steel.

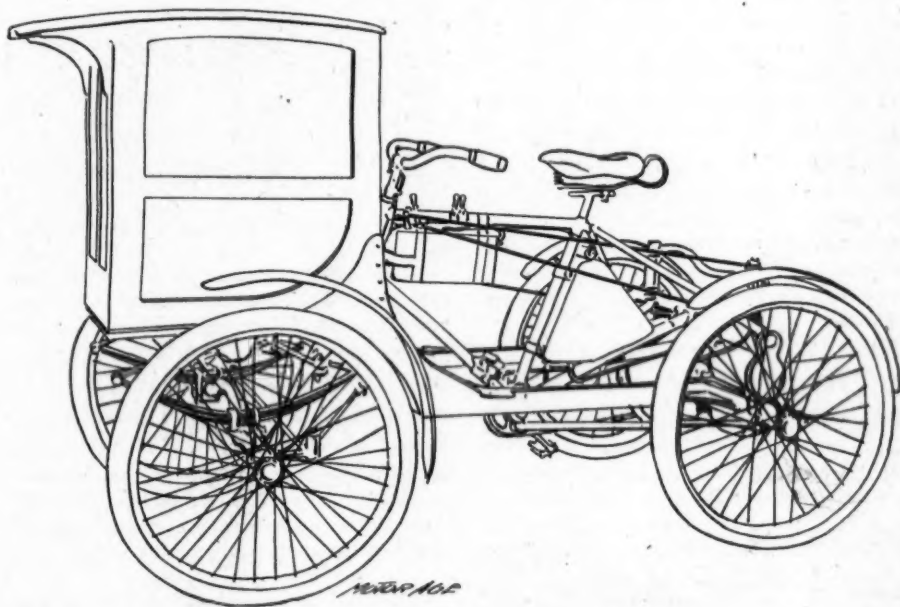
Canda Mfg. Co.

The two most distinctive machines shown in the display of the Canda Mfg. Co. of Cartaret, N. J., are the delivery quadricycle and the spider runabout. The former is built on the same lines as the regular Canda quadricycle with the exception that in place of the passenger's

open underneath and the two motors and apparatus are supported upon a low frame of T iron. These under parts are finished in a bright red, and, while the vehicle is a bit odd in appearance, it is in no wise unattractive. It looks like a very convenient little carriage. A regular Canda quadricycle and a tricycle complete the exhibit of these vehicles.

Electric Vehicle Co.

The major portion of the space occupied by the Electric Vehicle Co. of Hartford, Conn., with branches in all large



CANDA GASOLENE CARRIER.

seat in front of the driver is a miniature delivery wagon body. Its novelty is its lack of similarity to the plain box usually employed on delivery tricycles and quadricycles. It has an over-hanging roof exactly like that of a covered delivery wagon and the finish of the walls is identical. This interesting little machine is shown in the accompanying illustration.

The spider runabout is one of the very few gasolene carriages having air cooled motors. While the seat, foot board and dash are exactly like those of a regular bodied stanhope, the structure is entirely

cities, was devoted to the line of electric cabs, hansoms, broughams, omnibusses and runabouts which the company is popularizing by the establishment of city liveries for them and by depots from which any style may be leased or rented for continued private use by the week or month. It is averred that this system of renting the machines by the month is finding favor among those who can afford and desire such vehicles but who have no suitable stable facilities and do not wish to incur the expense of hiring readily accessible storage rooms. Under the

leasing system the Electric Vehicle Co. stores cares for and reserves the vehicle for the exclusive use of the renter.

In one corner of this exhibit stands the latest addition to the company's line, a gasolene runabout designed by and constructed under the direction of Hiram Maxim. This vehicle is distinctive in the disposition of the motor, which, contrary to usual custom in light hydro-carbon carriages, is placed in a vertical position over the front wheels. The vehicle is shown on page 383.

Automobile Co. of America

Six patterns of Gasmobiles constituted the display of the Automobile Co. of America, with offices at New York City and factory at Marion, N. J.

These were all handsomely finished, one of the standard patterns being in pure white. Gasmobiles are built under the personal supervision of A. T. Otto, treasurer and general manager of the company, and many of the features of the motor and driving gear for which particular claim of merit is made are of his origination.

Winton Motor Carriage Co.

The display of the Winton company of Cleveland looks thoroughly Winton-like. Three in a row are the substantial Winton hydro-carbon vehicles, which have



Automobile Co. of America's Four-Passenger Carriage.

become a familiar sight on the streets of most large cities—one a delivery wagon, another a spacious covered surrey and the third the latest pattern of the standard two-passenger Winton carriage. This last named carriage has been recently improved in several details although to

look at it without asking questions the only discernible difference between it and its predecessor, are the replacing of the steering lever by a wheel and the shortening of the rear body by about six inches. The improvements which are not



Automobile Co. of America's Delivery Wagon.

visible on the exterior are more important, however. The transmission counter shaft has been dispensed with and the driving gear runs direct to the rear axle; and the driving mechanism is entirely enclosed in a casing which furnished a complete oil bath for it. It is stated that this feature practically eliminates the running noise of the vehicle. The cooling water distributor is made more effective by means of an automatic rotary pump and an additional tank of reserve water has been placed in the touring box at the front of the body. Another of the new features is an automatic steering lock whereby the front wheels run rigidly in the line to which they have been set unless wilfully altered in their course by the manipulation of the steering wheel. Both front and rear wheels are now of equal size and all vehicles are regularly equipped with Dietz lamps.

EXHIBITS IN THE ANNEX

Manufacturers' displays were closely grouped in the annex and none of the exhibits were as large as those on the main floor. Many interesting features along new mechanical lines were notice-

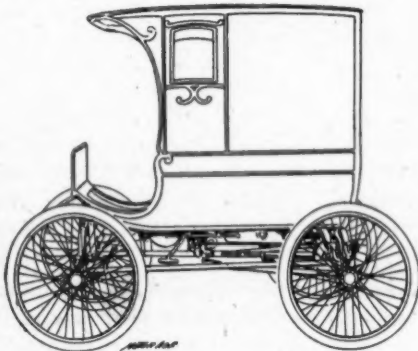
able, however, in the vehicles shown by the exhibitors.

Upton Machine Co.

The business of the Upton Machine Co. of New York city is to manufacture for automobile makers light, compact transmission gears affording two forward speeds and one reverse. These gears are at present built in two sizes. That for use with motors up to 5-horsepower is but 6½ inches in diameter, 15½ inches in length, and weighs 37 pounds, while the larger size for motors up to 8-horsepower is about one inch larger both ways and weighs 45 pounds. The disconnecting clutch is frictional and the various driving members are all spur gears. While the company does not intend to enter the field of automobile manufacture except upon special order, it has completed a light gasoline runabout in which its transmission gear is incorporated and exhibits this vehicle to demonstrate the adaptability of the gear in practical vehicle construction.

Steam Vehicle Co. of America

Manager Schermerhorn of the Steam Vehicle Co. of America, with principal offices in New York city, is always busy with personal explanation of the distinctive features of the three Reading steam vehicles shown by the company. These are a stanhope, a runabout and a light



Reading Steam Delivery Wagon.

delivery wagon. The last is one of only two steam vehicles of this kind shown. For compact, neat construction, the Reading delivery wagon is a model. It is shown in the accompanying illustration.

tion. The designers of these vehicles have not attempted to depart from standard construction and the distinctive points claimed for their driving and transmission mechanisms relate principally to carefully considered construction



Peerless Gasolene Voiturette.

of details with view to obviating troublesome small items in the operation and care of the machines. Particular attention has been paid in the construction of the bodies of both the delivery wagon and the carriages to render all working parts readily accessible.

Peerless Mfg Co.

The Motorette with De Dion motor shown by the Peerless Mfg. Co. of Cleveland is one of the most unique small vehicles at the show. In running gear, etc., it has all of the convenient littleness of the French type of "voiturette," but the body is spacious and furnishes a deep comfortable seat similar to those of the larger victorias. The "touring box" which takes the place of a dash is a folding affair, which, when opened, affords an additional and roomy seat. When the carriage is fitted with a goddard or stanhope top it presents an elegance seldom combined with small, low construction.

Munger Vehicle Tire Co.

This firm was unlucky in the delivery of its samples for exhibition and Saturday evening, with visitors walking around asking questions and treading on his shins, the original and unduplicated "Birdie" Munger, inventor of the much

commended tire and manager of the New Brunswick company which is preparing to manufacture it on a large scale, was down on his knees with a claw hammer in his fist and perspiration all over him, showing the house carpenter how to get an exhibit into presentable shape in a hurry and bidding friends who came his way to wait awhile for greetings. In a spare moment Munger stated that rapid progress is being made in the introduction of his tire and that he finds good reason to expect it to early become one of the standard equipments of high grade automobiles.

Trinity Cycle Mfg. Co.

The Keene Steamobile not only possesses an air of originality in general appearance because of its swelled front dash, forming a convenient place for the disposition of the compressed air tank, and its running gear frame which is a departure from the accepted pattern of the older steam vehicle builders, but which has many features about the engine and transmission parts which show that a desire to do its own thinking and experimenting has been manifested by the builders. One of the most noticeable of these is a double brake, or rather, two brakes, each operative by an independent foot lever. As both ends of each brake band are actuated equally the band will tighten securely upon the drum when the carriage is running in either direction. The makers claim that this feature in connection with the duplication of braking power makes the vehicle one of the safest yet built.

Particular stress is laid by the company upon its boiler regulator. This is in the form of a cylinder attached to the boiler and containing a hollow copper ball to float upon the water in the tube. A side cap for the tube contains two arc-shaped arms, or fingers, pivotally supported and connected one with the water feed by-pass and the other with the gasolene supply valve. As the water rises in the boiler, and hence in the tube, the hollow ball is raised and engages the upper side of the by-pass valve finger and when the correct limit is reached presses

into a position the finger which opens the valve and allows the escape of water without overflowing the boiler. On the other hand, should the supply in the boiler sink below normal the ball drops with it and when the boiler water reaches a depth of but one inch it so engages the gasolene valve finger that the supply of fuel is cut off to prevent injury to the boiler.

No torch is needed to generate the gasolene vapor in the combustion chamber and the flame regulating diaphragm does not merely slow down the flame when the steam pressure becomes excessive but shuts it off entirely with the exception of the pilot burner which always remains lighted and is capable of restarting the full flame in a very short time. The company states that its water regulator above described has proven so satisfactory that it expects to place it on the market for attachment to other steam vehicles.

Ohio Automobile Co.

Believing in practical demonstration, the Ohio Automobile Co. of Warren O., not only has one of its Packard gasolene carriages constantly running on the track, but, by disconnecting the transmission device of the vehicle in its exhibition stand, also keeps the motor of that one in almost continual operation, the purpose being chiefly to demonstrate the perfect control of speed afforded by the foot lever utilized for the purpose. Those who are inspecting the carriage are invited to seat themselves in it and when the motor is started to regulate the speed for themselves by foot pressure. Much interest is thus evoked by the varying sound of the motor as it obeys the orders of the treadle.

New York Motor Vehicle Co.

The principal feature of the exhibit of the New York Motor Vehicle Co. of New York city is a bulky vehicle and it is in the main lobby, where it commands the attention of all who enter and pass out. It is the steam omnibus or carette which was illustrated and described in a recent issue of *The Motor Age*. Its size and capacity suggest the

thought that with such vehicles in competition, street railways of the future will have lost sufficient patronage to necessitate the withdrawal of at least a part of their present arrogance toward the owners of city streets.

John T. Robinson & Co.

A channel steel V-frame supports the motor of the spider runabout or stanhope displayed by the John T. Robinson Co. of Hyde Park, Mass., and all of the mechanism in connection with the two-

mobile Co. of Chicopee Falls, Mass., for, besides the clever Victor steam carriage, it contains the versatile A. H. Overman ready and glad to answer all questions, large or small, which any one cares to ask. The same personal pride which Mr. Overman always displayed in talking of his Victor bicycles is evident when he points out the features of his new pet. He does not brag. He merely shows and explains convincingly, and so well does he know the topic whereof he talks that



ROBINSON GASOLENE CARRIAGE.

cylinder gasolene motor is well grouped near the rear axle. The Upton transmission gear is used, although for ordinary road work in which speed variation is regulated by ignition timing, the gears are not employed, the motor driving directly to the rear axle. The body is hung entirely separate from the engine truck and is mounted on highly elastic Palmer springs, as shown in the illustration.

Overman Automobile Co.

To those who have been or now are interested in the bicycle trade it is a treat to visit the exhibit of the Overman Auto-

mobile Co. of Chicopee Falls, Mass., for, besides the clever Victor steam carriage, it contains the versatile A. H. Overman ready and glad to answer all questions, large or small, which any one cares to ask.

The first thing he has to say of the Victor carriage is that it is fool proof and that much time and care has been exercised in the production of numerous ingenious contrivances whereby the actual work of operating the machine is reduced to a minimum. His introductory is something like this:

"Should a man come to our place to buy and ask for instructions concerning the operation of the carriage, we would make him climb in, tell him that this is the steering lever; that by pressing forward on that one he can make her go

ahead and that by pulling it back he can stop it or make it go backward—and then let him run it out on the road by himself."

Then, while telling of the easy manipulation of the machine, Mr. Overman pushed a small button on the front edge of the seat and open flew one of the side panels, exposing the engine. By pushing a button on the steering handle a small electric light illumines the gauges on the dash board, a convenience for night riding. The normal air pressure is thirty-six pounds, but should it be desired to increase this a third button serves the purpose in a twinkling by setting an automatic pump to work, while by pulling out a small knob the water supply may be run up above the normal limit. A thumb latch allows the flame to be turned on full blast if desired. Regarding these conveniences Mr. Overman said:

"It is our idea to not only make the machine so that it will develop a stated amount of power to accomplish a certain amount of work but to so place it in the control of the driver that from the seat he can throw personality into his riding, and, by being able to increase the speed at will above the regular limit, feel that he has a steed just as responsive to his urging as the horse he once drove."

The Victor carriage also contains other peculiar features. For instance the exhaust steam is arranged to pass through and condense within the several tubes of the running gear. It is then discharged through over sixty small holes in the bottom of the front cross tube. It is said that when driving at ordinary speeds the exhaust is hardly visible and that even when an unusual amount of steam is being consumed the exhaust, by the time it has reached the rear of the vehicle after being discharged underneath the front, presents only the appearance of fine white dust. One thing is certain, as shown by the vehicle being run on the exhibition track, the exhaust does not come in puffs and is scarcely audible. One other important feature of the machine is the metal body, the entire struc-

ture being of sheet steel with aluminum panels.

Mr. Overman is an enthusiastic friend of steam as motive power. He but recently returned from France and is not much pleased with the high speed racing machines used over there. "They are not practical vehicles," said he, "but merely huge locomotives to please the sporting element, which is not the element upon which the success of the industry is based. It is no particular credit to a builder to make a big machine which can go fast. It is simply a matter of using a big engine and there is no limit to that. I had a seventy-mile ride in one of them, and, while it was interesting as an experiment, I do not care for another trip.

"For the practical vehicle I cannot see how anything but steam can become standard. Electrics are all right for certain purposes, but the widely adaptable motor-vehicle must make its own power, which the electric does not do. So there are left but two kinds of power—explosive and expansive—gasolene and steam. The motor-vehicle power must be elastic. That is the primary requirement. No one can truthfully say that the gasolene motor is an elastic power generator. Its name—explosive—is typical of its action. Give me the ever reliable persuasive steam power of our grandfathers—and of our grandchildren too. It is the natural power because it is the only truly elastic power."

Mobile Co. of America

The display of three Mobiles on the floor of the annex looks small for such a concern as the Mobile Co. of America, until the visitor learns that it is merely an outpost guard of the big exhibit on the roof of the garden. Here, up toward the sky, and going further up every half hour, is a magnificent display of at least twenty-five Mobiles and a frequently repeated demonstration of hill climbing, which not only inspires the applause of spectators, but so excited the city fathers of New York that they pronounced it too daring to be possible, and were only won over to consent to its performance by "being shown."

Running from the roof to a point about 100 feet up the garden tower is a steep incline about ten feet wide and 200 feet long. It has three grades and two sharp turns. The first grade is 40 per cent, the second 45 percent, and the third and top 35 percent. Every half hour Joseph McDuffie or some other skilled rider runs a regular stock Mo-

the approval of even competitors of the Mobile company. Randolph Walker, son of John Brisben Walker, is in charge of this test and expresses himself as being greatly satisfied with the results obtained from it as an advertisement of the possibilities of the Mobile.

Harry E. Day

In connection with the exhibit of the



AUTOMOBILE CO. OF AMERICA'S GRADE ON MADISON SQUARE ROOF GARDEN.

bile up this sky-piercing hill and onto a small platform at the top. Then, to show how well the Mobile brake works on reverse as well as forward driving, he backs down to the bottom of the top of the grade, turns the machine around at the corner where the middle grade connects with the top, and then runs safely, front foremost, down to the bottom. This is one of the most attractive features of the show. It daily draws crowds of curious visitors and commands

De Dion-Motorette Co., Harry E. Day, 711 East 136 Street, New York city, shows a sample model of his recently invented electric bell. This automobile alarm is made in an original manner. The magnet is of the iron clad type, entirely enclosing the coil, making the latter waterproof. The whole is enclosed in a double gong, thus affording an extremely neat appearance. The hammer is a steel rod which has a reciprocating movement through the axis

of the magnet, and the latter, being inclined at a slight angle, causes the rod to strike the edge of one gong at one end and the opposite gong at the other.

Bowman Cycle Co.

Sidney Bowman, the well known New York bicycle dealer, is on hand with a full measure of pleasant things to say and a Kensington electric stanhope to show and vouch for. The Bowman company acts as New York agent for this vehicle. Later in the week this exhibit

ports the steering head of a fork carrying the steering wheel in exactly the same fashion that the steering wheel of a bicycle is mounted. The body sets somewhat above the frame after the fashion of any spider carriage, the motor and transmission gearing being uncovered by it. The motor is air cooled and is placed nearly horizontal in a longitudinal position. A distinctive novelty is brought out in the air circulator around the motor cylinder, this being of



KNOX GASOLENE VOITURETTE.

will be enhanced by an electric runabout and a steam runabout. It is stated that the Kensington company has in course of construction a delivery wagon and a dos-a-dos.

Knox Automobile Co.

The practical development of the three-wheeled motor carriage is the particular branch of work undertaken by the Knox Automobile Co. of Springfield, Mass., and the vehicle exhibited by them is original both in design and construction. A frame of the design shown in the illustration of angle steel attaches to the rear axle and its front peak sup-

ports the steering head of a fork carrying the steering wheel in exactly the same fashion that the steering wheel of a bicycle is mounted. The body sets somewhat above the frame after the fashion of any spider carriage, the motor and transmission gearing being uncovered by it. The motor is air cooled and is placed nearly horizontal in a longitudinal position. A distinctive novelty is brought out in the air circulator around the motor cylinder, this being of

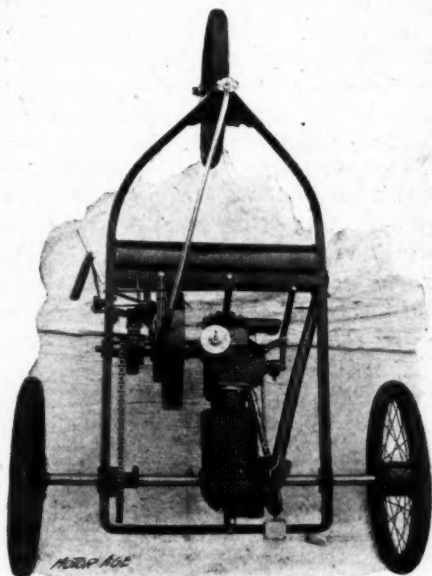
International Motor Carriage Co.

One of the several exhibits in the annex comprising each a single vehicle of recent construction with unique constructional detail sufficient to deserve

considerable study, is that of the International Motor Carriage Co., whose factory is at Stamford, Conn. The machine shown by this company is a substantially built stanhope of the hydrocarbon type. Considerable care has been given the finish as well as the construction of the operating parts.

Springfield Cornice Works

For simplicity, protected mechanism, and substantiality, it would be hard to excel the Meteor gasoline vehicle of the Springfield Cornice Works of Springfield, Mass. The most accurate brief de-



Complete Running Gear of the Knox Voiturette.

scription that could be given of it would be that it looks like a French "voiturette" disrobed of visible mechanism. It is low and the floor is flat from end to end, carrying the seat at its rear and a small motor and attachments box in front. With the exception of the steering wheel there are no visible running parts, the driving gear being well encased and hung so close to the under side of the floor as to be not noticeable from the level of the eye. The frame is strong and spring mounted in a manner which allows wheel compensation for rough roads without straining the

running gear. The carriage weighs complete but 450 pounds. It should be very handy to drive and the company's intended purpose of making it absolutely without complication has been well carried out.

Duryea Power Co.

Those who have watched the development of the motor-vehicle industry met a familiar sight in the space occupied by the Duryea Power Co. of Reading, Pa. The three or four wheeled, whichever one wishes it, Duryea gasoline phaeton stands alone as an unpretentious reminder that one of the pioneers of the automobile trade in this country is still alive with the same mechanical bee buzzing in his experienced bonnet. The ready manner in which the little carriage can be converted from a three to a four-wheeler and its surprising stability in either role attracted no mean attention.

St. Louis Motor Carriage Co.

Besides the vehicle reserved for demonstration purposes on the track, the St. Louis Motor Carriage Co. of St. Louis displays a two-cylinder gasoline motor carriage of the spider pattern. But little recent change has been made in the vehicle since similar models were exhibited at Chicago, the company having found to its satisfaction by hard road tests that it is a practical, enduring carriage, fully ready for the market.

Motsinger Device Co.

The same exhibit space is shared with the St. Louis company by the Motsinger Device Mfg. Co of Pendleton, Ind., which shows one of its Autosparkers. This is a miniature dynamo run by the motor and equipped with a small ball governor to regulate its revolution. The device obviates the use of batteries and is said to be thoroughly reliable. It is used on the vehicles exhibited by the St. Louis concern.

Holyoke Automobile Co.

In its space, which is shared by the American Roller Bearing Co., the Holyoke Automobile Co. of Holyoke, Mass., is content to show photographs of its gasoline carriage. The Roller Bearing

company has on hand a complete wheel, as well as hubs and parts.

AUTOMOBILE LOAN EXHIBIT

The Automobile Club of America, under whose auspices the show is being held, has arranged in the annex an interesting loan exhibit of curios in automobile building. It includes the following:

Richard Dudgeon's steam carriage, built in 1860, and an exact duplicate of Dudgeon's original vehicle built in 1855 but destroyed in the Crystal Palace fire. It is said that it has been run over 10,000 miles and to have attained a speed of thirty-five miles on short runs. It has a horizontal boiler with side seats facing inward. Under each seat is a long, flat water tank. The piston drives direct to the rear axles.

Riker electric racing carriage, which won the Blanchet cup in a fifty-mile road race in 2:03:30.

S. T. Davis' steam racing car, built by the Locomobile Co. of America.

Walking automaton pushing wheel chair. Driven by electricity. Built by George R. Moore of Westford, Mass., in 1891.

Voiturette owned by Albert R. Shattuck, president of the Automobile Club of America. Aster motor with Prunel French running gear and a handsome body supplied by a New York carriage builder.

A. C. Bostwick's Clement French voiturette.

Roper's steam bicycle, built in 1896 at Roxbury, Mass. Weight 150 pounds; highest speed attained, one-third mile in thirty-one seconds.

De Dion racing tricycle which won last Paris-Toulouse-Paris road race, covering the 831 miles at a speed of twenty-seven miles per hour. Highest speed attained, forty-nine miles per hour.

Grant Lyman's 6-horsepower Panhard-Levassor gasoline car.

Steam bicycle built by W. W. Austin at Winthrop, Mass., in 1868. Said to have been run 2,000 miles. Weighs 90 pounds. Is an old wooden wheel bicycle of the front wheel velocipede pattern, to

which a small boiler and a cylinder driving the rear wheel has been added.

Supplementing the club's exhibit is the immense Panhard-Levassor racing car whose 6-horsepower motors have carried the enthusiastic Albert C. Bostwick to several notable victories. It stands at the entrance close to the steam omnibus of the New York Motor Vehicle Co.

IN THE GALLERY—TIRES AND PARTS

The tire makers took up a very considerable portion of the space in the gallery devoted to the manufactures of parts and accessories. Their exhibits naturally attracted far more attention from the trade than from the public. "Rubber row" was one of the busiest sections of the show. The booths were handsomely fitted up and there was a very evident effort made to receive the trade not only conveniently but luxuriously for the transaction of business. Motor vehicle tires have been exploited so persistently and the trade is so familiar with the different brands that detailed description of the exhibits would be practically a mere repetition of which Motor Age declines to be guilty.

Diamond Rubber Co.

The headquarters of the Diamond Rubber Co., of Akron, Ohio, had been converted into a handsome business office richly carpeted and elaborately furnished. This company was a pioneer in the automobile tire field and its product is among the best known in the new industry. The booth was as much a rendezvous of old customers as a place of demonstration for the attraction of new ones. Complete satisfaction was expressed by those in charge with the progress and popularity of the single tube tires, which were the company's first effort, and it was declared that much of the company's endeavor would continue to be devoted to pushing this line.

B. F. Goodrich Co.

At the handsomely fitted booth of the B. F. Goodrich Company, of Akron, Ohio, the various forms and sizes of the company's well known clincher vehicle tires were shown as well as steel rims for the

various sizes. It was announced that the 1901 catalogue would be out in December.

Goodyear Tire & Rubber Co.

The Goodyear Tire & Rubber Co. of Akron, Ohio, makes a great variety of pneumatic motor tires for all weights of vehicles, from the lightest to the heaviest. Samples of these were in the hands of the corps of demonstrators at this booth. This company is displaying marvelous energy in pushing its motor vehicle tire trade. It offers nothing "freaky" but simple single tube tires, conscientiously made in enough different varieties to fill all the needs of the automobile manufacturer.

Consolidated Rubber Tire Co.

The consolidated Rubber Tire Co., 40 Wall Street, New York, makers of the Kelly-Springfield tires, is the pioneer in the manufacture of rubber tires for vehicles and is the stoutest advocate of the use of the solid tire in automobile construction. Its extensive list of licensees attests the popularity of its tires in the carriage trade. The effective methods of fastening to the rims has much to do with the general satisfaction and these are protected fully by patents. A full line of samples was shown and the method of fastening was ably demonstrated.

International Automobile & Vehicle Tire Co.

The International Automobile & Vehicle Tire Co., of New York, had its full line of samples in charge of competent demonstrators. This concern has devoted considerable effort in the direction of solving the heavy vehicle tire problem and the sectional tire shown was a notable exhibit in this line. It was whispered about this booth that some new moves were contemplated relating to the output and its production.

Hartford Rubber Works Co.

The Hartford Rubber Works Co. refuses to enter at all into competition for the cheap tire trade and aims only at the highest grade. It states frankly in its catalogue that its carriage tires therein listed are suitable for any light, horse-drawn vehicles and will not stand motor vehicle uses. Intending purchasers are re-

quired to state the weight of the vehicle to be fitted and quotations are then made on tires deemed most serviceable. Demonstrators at this booth devoted themselves to an exemplification of the general merits of the Hartford tires with satisfactory results in the way of sales and special orders.

New York Belting & Packing Co.

At this writing the decorators were still at work at the stand of the New York Belting & Packing Co., of New York, and the exhibit was far from complete. The indications were, however, that by evening an exposition would be in order commensurate with the importance of the company in the tire world.

Janney, Steinmetz & Co.

Automobile boiler shells made of seamless, cold drawn steel, capable of standing over 1,000 pounds pressure and with flat head drawn into the body, form the principal feature of the display of Janney, Steinmetz & Co. of Philadelphia, manufacturers of a great variety of steel tube and specially drawn shape specialties. The boiler shells are supplied in sizes of all internal diameters from 12 to 20 inches and with walls from 1-10 to 1/4 of an inch thick. The company also shows, and is prepared to furnish, a large variety of high pressure tanks for containing gas, air, water, steam, etc.

New Process Rawhide Co.

Noiseless gears, made of rawhide, with teeth cut by the latest approved methods and in spur bevel, and internal patterns and many sizes are shown in ample quantity by their maker, the New Process Rawhide Co. of Syracuse, N. Y. The company avers that its gears are especially applicable to automobile transmission devices because of their quiet meshing with each other.

Pennsylvania Automobile & Gear Co.

The exhibit of this firm consists of a complete running gear of its manufacture, mounted on wheels and ready to receive the driving gear, motor and body. The frame is tubular and is designed especially for vehicles of the runabout pat-

tern. They are supplied complete by the company whose factory is at Reading, Pa. S. L. Packas of New York city acts as selling agent.

C. F. Splitdorf

Jump spark coils, particularly adapted to use with automobile gasoline motors, are exhibited by C. F. Splitdorf, 23 Vandewater Street, New York city, who is ready at all times to talk ignition in all of its many troublesome phases, suggests correct batteries and plugs and to expound, with illustrations, the merits of his well known coils.

Crest Mfg. Co.

Regular patterns of the various one and two cylinder air and water cooled motor made by the Crest Mfg. Co. of Cambridgeport, Mass., are shown and explained by the gentlemen in charge of this company's exhibit, particular stress being laid by them upon the fact that none of the motors are experimental engines, but thoroughly reliable and well tested motors ready for application to the different styles of motorcycles and automobiles for which they are respectively intended.

E. A. Brecher & Co.

The Fleming motor for which E. A. Brecher & Co., 97 Reade Street, New York city, are agents in the metropolitan district, was the feature of this firm's exhibit. A line of general parts and accessories, including spokes, ball cups and cones and repair material was also shown.

The Newspapers

The New York Tribune, which has shown notable friendliness to the automobile, has a tastefully decorated booth, where it exploits a voting contest for a Mobile. George E. Stackhouse, its automobile editor, is much in evidence here.

The Motor World, the American Automobile, the Automobile, the Electrical Age, the Carriage Monthly, the Horseless Age and the Hub were represented in newspaper row on the balcony.

EXHIBITORS OF ACCESSORIES

Gray & Davis of Amesbury, Mass., are a comparatively new concern, having

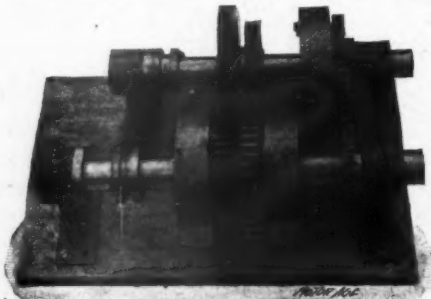
been in business but four years. Progressive energy, however, is strongly in evidence in its extensive exhibit of lamps. The Mobile Special, the Delta, the Raleigh, the Sappho, the Special, the Stanhope, the Oakland, the Runabout, the Duchess, the Brougham and the Acetylene were included in the line of side lights. They, however, made their "locomotive headlights" a very prominent feature of their exhibit. The company manufactures in all more than fifty patterns of lamps in acetylene, oil, candle and electric patterns.

Gleason-Peters Air Pump Co.

Emergency water pumps, worked by hand, for pumping an additional supply of water in a steam boiler when under pressure, was the leading feature of the exhibit of the Gleason-Peters Air Pump Co., Houston and Mercer Streets, New York. An extensive line of hand, foot, power, and motor air pumps, for tires and cylinders, already familiar to the automobile public, was included in the exhibit. The company issues a catalogue of pumps particularly adapted to automobile use.

Charles E. Miller

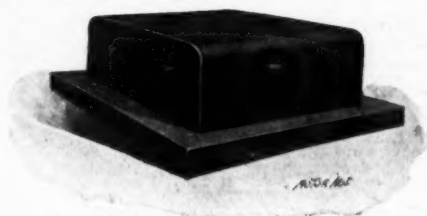
To Charles E. Miller, 97 to 101 Reade Street, New York, manufacturer, jobber and exporter, belongs the credit of having gotten out the most comprehensive catalogue of accessories and parts yet issued to the trade. Samples of as many



Empire Transmission Gearing.

of his lines as possible were shown at his booth. He is the metropolitan representative for the Cortland Carriage Goods Co., Louis W. Rawson, Carse Bros. Co., Charles K. Hood, the Pneumatic Wheel Co., Werner Motor Co.,

Lowell Model Co., Locke Regulator Co., Brown-Lipe Gear Co., Empire Motor Works, and Maxson Vulcanizer Mfg. Co. The company also has on display a sample of the 4-horsepower opposed cylinder motor made by the Lowell Model Works from designs furnished and published by



Empire Transmission Gearing Enclosed.

The Motor Age. The motor is well made and is attracting considerable attention because of its simplicity. In order to create smiles as well as interest for their visitors, these exhibitors are distributing a funny little circular portraying in cartoon style the firm's factory and the force which operates it. The front page pictures an up-to-date farmer going to town in a "hoss-mobile."

Veeder Mfg. Co.

Veeder cyclometers were the pioneers of the present accepted pattern of bicycle cyclometers. Their absolute accuracy and perfect workmanship have made them a standard article in practically universal use. The same principles have been applied to the Veeder odometers for carriage and automobile use. They can be attached either to wooden or wire wheels and have a special clip for attachment to arched axles. The Motor has recently described them fully.

Rose Mfg. Co.

The "Neverout" brand of lamps was well known in the cycle trade and its makers, the Rose Mfg. Co., 910 Arch Street, Philadelphia, seems determined to push it as hard in the new trade. Three styles of these kerosene lights adapted to automobile use were shown.

Metallic Rubber Tire Co.

The tire cover to prevent slipping and lessen the danger of puncture was shown by the Metallic Rubber Tire Co.,

210 Centre Street, New York. A strip of rubber studded with felt-headed rivets driven from the inside and clinched on the outside constitutes the cover. They can be securely vulcanized or cemented to any tire, old or new. A protection on the side prevents the steel rim of a wheel from cutting into the tires.

C. J. Downing

C. J. Downing, 97 Reade Street, New York, has for a leader Rice's auto steam engine and a considerable variety of parts, including cups and cones, wheels, Baldwin chains, tires and various accessories.

The Rice engine might be called a rotary motor, although it drives by cranks. In the cylinder is an eccentric whose guide only engages the port valve in the steam head. When the eccentric disk is at the top of the cylinder the admission port is open and steam enters until the eccentric reaches the lowest point, when the admission port is entirely closed. The expansion of the steam drives the eccentric to the top of the stroke. The engine may be readily reversed. The sample shown has two cylinders and is said to develop five horsepower. It is the intention to build a single-cylinder model for light automobile use.

Joseph Dixon Crucibles Co.

The Joseph Dixon Crucible Co. of Jersey City has adapted its graphite products to automobile use in several ways. A pyramid of barrels set forth the various brands. Among them were graphite for enclosed driving chains, ball bearing, and light bearing parts; graphite lubricants for gears of electric motors; graphite compound for pipe joints; graphited wood grease for gears of enclosed motors, everlasting graphite axle grease, pure flake Ticonderoga lubricating graphite, silica graphite paint for painting gears, etc.

Bivin Bros. Mfg. Co.

Bevin Bros. Mfg. Co., East Hampton, Conn., had on hand samples of four varieties of foot bells easily attached to the floor, allowing only the plate and

plunger to protrude. The double chiming gongs give four distinct strokes. The electric stroke double gongs have a plunger extension, preventing the plunger from becoming displaced.

Dow Portable Electric Co.

The Dow Portable Electric Co., 218 Tremont street, Boston, Mass., maker of jump spark ignition specialties, showed four varieties of battery, three styles of sparking coils, a spark plug, and a lamp and holder.

AT THE GARDEN MONDAY

New York, Nov. 5.—Throughout the day the exhibits have been frequented by visitors who have come and gone, each departing group being replaced by another, equally bent upon learning new facts about automobiles. The class of visitors has changed slightly since the opening Saturday night and it is now evident that trades people, looking for agencies, will be seen in fair numbers in the garden before the show is over. Although the number of dealers who visited the show today was not large, many of the exhibitors expressed themselves as well pleased with the character of the patronage, for even those who represented the general public were of the class which thinks of riding in automobiles sooner or later—preferably sooner—and the questions fired at the manufacturers took a more practical turn than those characteristic of the more fashionable visitors of Saturday evening.

The track was filled all day with different machines, in which interested persons were being given sample rides and concerning the distinctive merits of which they were being duly impressed.

With the turning on of the electric lights at night the fashionable throng was once more in the ascendant—and in far greater numbers than on Saturday—and the names of Vanderbilt and the other autofans of the Newport set were heard frequently as they were pointed out among the throng.

It was proved, conclusively, that the management had made no mistake in refusing to give up the track to exhibition stands. It has been in constant use during the day for trial rides and tonight it was filled with an unending, closely formed procession of every motor driven pleasure vehicle known, from the saucy little bicycle to the great Cabriolet of the Woods Motor Vehicle Co. of Chicago, with its liveried driver and footman. This attracted the most attention of the evening, though two elegantly dressed ladies in a victoria with footman behind rivaled it as an exhibit of the swell phase of automobilism.

It cannot be said that the crowds in attendance can compare in number with those of the cycle show or the horse show. The aisles are narrow and the track takes up much space. The exhibits themselves occupy much of the standing room.

In a word, there is not too much room on the floor left for spectators anyway. To-night the boxes were filled and there was a generous sprinkling in the arena seats and altogether there was a notably larger attendance than on the opening night following a stormy day and the great political parade, when the figures approached 2,000.

The scheduled track event for the afternoon failed to materialize. In the evening there was an obstacle race on the south side of the track. Barrels were set up, compelling sharp curves. After rounding the barrels the vehicles had to run into a chute closed at the end, back out again and encircle other rows of barrels. There were four competitors. Walter C. Baker on a Baker steam vehicle was the winner. He traversed the distance in 25 seconds, which was the fastest time, and also touched the fewest obstacles.

Edwin Adams, on a Waverley electric, was second.

NEWS OF THE MOTOR INDUSTRY

OHIO TRADE NEWS

Cleveland, Nov. 5.—Cleveland has long been recognized as having probably more than the average number of experimenters in automobile mechanics and appreciating this it is natural that capitalists in the surrounding district who are desirous of investing in the new and promising enterprise should turn to the Forest City for those who have developed practical ideas in auto construction. Within the past month two designers of vehicles have completed deals for the manufacture of their machines in nearby towns.

A Factory for Akron

It develops that the concern organized two weeks ago as the Woodruff Motor Vehicle Co. has closed a deal with the owners of the plant of the National American Cycle Co. at Akron and the removal of the local experimental shop is to take place at once. The financial head of the Akron Motor Carriage Co., as the concern is to be called, is Fred E. Smith, who is an official of the Second National Bank, Akron, and who holds the mortgages of the former bicycle company. The others interested are G. E. Woodruff, A. M. Woodruff, T. W. Neubmeyer, and Charles Drabek of this city. The Akron plant is unusually well equipped for the work, the machinery having been appraised at \$90,000 and it will be utilized wholly by the new company. Three styles of gasoline vehicles will be built; a small runabout equipped with 2 horsepower motor listing at \$500, a runabout with 4 horsepower motor at \$800 and a phaeton with 6 horsepower motor at \$1,200. Several experimental machines have been built in this city. A single-cylinder, four-cycle motor of very simple pattern will be used.

And a Factory for Mansfield

C. Darling, formerly in the bicycle business in this city who has had a successful gasoline runabout in operation in

this city for some months, has closed a deal with the Beardsley & Hubbs Co., Mansfield, Ohio, carriage manufacturers. The company has secured a factory building in that city and machinery is being installed for the extensive manufacture of vehicles. The Darling vehicle is a very attractive one and it shows a number of novel features.

Eastman Agents

The Eastman Automobile Co. has closed a contract with Adams & Hart, Grand Rapids, Mich., jobbers, to handle its steam vehicles in that section. An initial order for twenty-five vehicles was placed. Ralph Temple has arranged to handle the Eastman vehicle and the Eastman metallic body in Chicago.

W. S. ROGERS' BOOKLET

W. S. Rogers of the Ball Bearing Co. of Boston, Mass., has issued a booklet descriptive of his gasoline motor vehicle. After doing *The Motor Age* the compliment to quote its recent description of the vehicle, he gives further particulars of the transmission mechanism, bearings, etc., together with a table of the cost of the first vehicle, showing that the materials cost a total of \$632, while 1,067 hours' time at thirty cents an hour brought the total up to \$952.10.

In this connection Mr. Rogers says, "For the benefit of those who contemplate constructing vehicles I give the cost of my first machine, built under conditions that were most favorable, there being complete drawings in detail of the working parts, as well as assembled drawings of the different combinations, thus eliminating all 'cut and try' methods and giving the workmen opportunity to make rapid progress without any errors."

In another place he says, "This machine is not called an 'automobile,' 'mobile,' 'locomobile' or any other kind of

'beel,' but is just a plain American motor carriage, as easy to pronounce as it is to operate."

A COMPLETE PARTS CATALOGUE

Charles E. Miller of 97 to 101 Reade street, New York City, has just issued a very elaborate catalogue of automobile parts. Mr. Miller advertises himself as the Metropolitan representative of no less than twelve different manufacturers, whose goods he illustrates in his catalogue, in addition to the wares of a large number of other firms. The catalogue shows that there is scarcely a thing in the way of parts or accessories for steam or gasoline vehicles that can not be obtained from this enterprising jobber.

THOMAS' BUSINESS CATALOGUE

The E. R. Thomas Motor Co. of Buffalo, N. Y., have issued their first catalogue of motors and motorcycles. While perfectly plain in design, the booklet is excellently printed and illustrated, on high class paper. It is evidently designed to appeal to the business man by a clear and unimbellished description of the business and goods which the company are manufacturing, rather than by an attempt at the artistic and superfluous. An illustration of the medal awarded at the Toronto Industrial Exhibition in 1899 first greets the reader, following which come a few words about the company and then a description of the various types of motor bicycles, tricycles, quadricycles and voiturettes, which it manufactures. Then comes a description of the Thomas motors and some of the Thomas parts.

In this connection it is well to state that the Thomas people have announced that they are now prepared to furnish the castings in the rough for their $1\frac{1}{2}$ and 3 horsepower motors. The $1\frac{1}{2}$ horsepower motor is 12 inches high and has a crank case of $5\frac{1}{2}$ inches diameter and $2\frac{7}{8}$ inches wide. The 3 horsepower motor is $19\frac{1}{4}$ inches high and has a crank case of $11\frac{1}{4}$ inches diameter and $3\frac{3}{4}$ inches wide. A set of castings for either of these motors includes the cylinder and

head, piston and rings, air valve, air valve cap, air valve clamp, exhaust steam guide, phosphor bronze connecting rod bushing, two fly-wheels, aluminum crank case, phosphor bronze crank case bushing, vibrator bushing and exhaust cam cover, aluminum vibrator cover and vibrator nuts.

The Thomas company are also handling a number of specialties which are of value to the motor vehicle trade and to the motor vehicle user. Among these



Thomas Densimeter.

is a densimeter or instrument for determining fluid density (in this case of gasoline). The accompanying illustration shows it one-third actual size. By the aid of one of these little instruments the automobilist can avoid the use of gasoline of inferior quality and thus be saved many annoyances incident thereto. The densimeter has graduations from 60 to 90 degrees and is furnished with a wooden case for the pocket for \$1.00.

NEW LOCOMOBILE CATALOGUE

The Locomobile Company of America have issued a new and very elaborate catalogue. Whoever is responsible for the get-up of this brochure is to be commended on having performed his work in a manner both artistic and convincing. The title page conveys the information that the company has no less than seventeen branches, in addition to their

numerous agencies. The body of the catalogue is devoted to a lucid description of the vehicles made and marketed by the company. Numerous questions have also been answered. These questions are doubtless constantly being asked by prospective purchasers. The manner in which they are answered is both unique and conclusive. They are not asked and answered in words but the questions are implied and the answers are given in a series of halftone reproductions of actual photographs, showing the vehicles of the company in service on the race track, in deep snow, on stiff grades and the worst of roads, and in places where the most exact control is shown to be necessary. A series of views of vehicles in the Yosemite rounds out the body of the catalogue, which is completed with illustrations, prices and other data of the several styles of vehicles offered to the public.

A PHILADELPHIA AUTO SHOW

Philadelphia, Nov. 5.—As was intimated some weeks ago, this city will have an automobile show. It is scheduled for the first week in February, and will probably be held in the Second Regiment Armory, on Broad street above Diamond. The promoters of the show are men well known on "Automobile Row," and already the preliminaries are being arranged. Many manufacturers and dealers have already given the promoters assurances of their support, and it is quite probable that this, the first local venture of the kind apart from the exhibit given in connection with the National Export Exposition last fall, will be a success.

BRIEF NEWS OF THE INDUSTRY

The Scott Automobile Co. of St. Louis has been incorporated for \$30,000.

The California Automobile Co. of San Francisco, has been incorporated for \$150,000.

Julien F. Denison, proprietor of the Denison Electrical Manufacturing Co., makers of electric motors and two-cycle gasoline engines, has filed a petition in

bankruptcy. The liabilities are placed at \$24,618 and the assets at \$2,961.

The Blood-Mille Motor Vehicle Co. of Minneapolis has been incorporated for \$500,000.

The Electric Carriage & Transfer Co. of San Francisco, has been incorporated for \$250,000.

The Louisville Automobile Co. has been incorporated for \$25,000, to conduct a cab and hauling business.

The International Motor Carriage Co. has been incorporated under the laws of New Jersey for \$200,000.

The Springfield Motor Vehicle Co. of Springfield, Mass., has been incorporated under Virginia laws for \$50,000.

The Columbia Automobile Co. of Columbia, S. C., has been incorporated for \$5,000, to conduct an automobile line.

The Illinois Electric Vehicle Transportation Co. officially deny the current report that the company is to be liquidated.

The Union Automobile Transportation Co. of Williamsport, Pa., has been incorporated under the laws of Delaware for \$500,000.

William F. More of 49 South Carpenter Street, Chicago, a practical machinist, has made preparations to make hubs and bearings for the trade.

Louis Langan, formerly of St. Louis and later secretary of the Buffalo Gasoline Motor Co., has become manager of the Motor Vehicle Power Co., 1221 Spring Garden street, Philadelphia, at whose factory he is now busy putting in machinery. Mr. Langan is a man of great experience in the gasoline motor line and counts confidently on building up a big business in the Quaker City.

Charles S. Jenkins of the New Jersey Car Spring & Rubber Co. states that his firm has already secured several orders for their Wemaka solid rubber automobile tires, which are built on a new principle, and that, having found them to give entire satisfaction, they are going to cater largely to the automobile trade. The virtue of the Wemaka tire over others, lies in the patent feature, whereby the tire is absolutely prevented from creeping.

CONSTRUCTION OF A MOTOR VEHICLE

THE PRACTICAL CONSTRUCTION OF A MOTOR VEHICLE ADAPTED FOR USE IN CONNECTION WITH
THE FOUR-HORSEPOWER GASOLINE MOTOR ALREADY DESCRIBED IN THE MOTOR AGE
BY L. ELLIOTT BROOKES

PART VI.

The body of the vehicle is the next part to be taken up. This should be made by a carriage maker, as it will build it, with the exception of the thickness of the material, which is a matter to be left to the judgment of the body

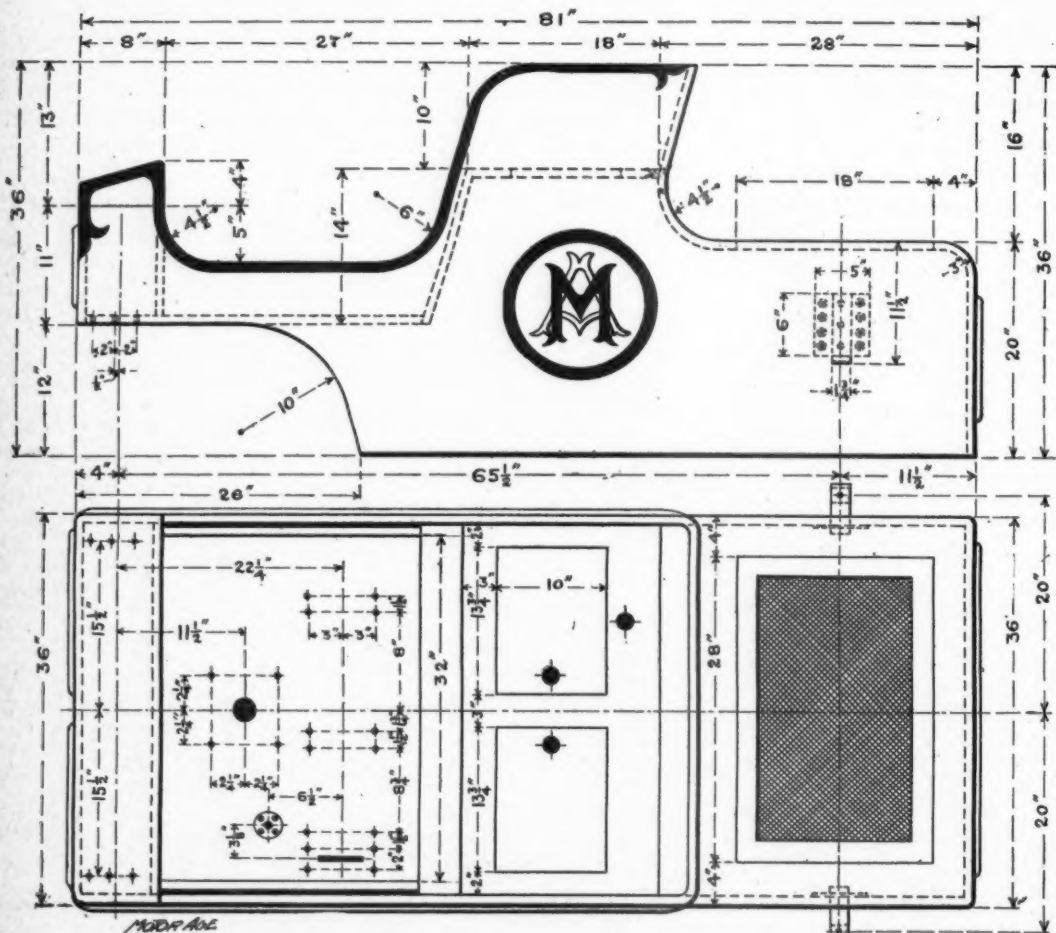


FIG. 61.—SIDE ELEVATION AND PLAN OF BODY.
1—Complete.

result in a cheaper and better job than if the builder attempts to construct it himself. A plan and side elevation of the body is shown in Fig. 61, giving all the necessary instructions from which to

maker. In the front of the body and in place of a dash, is a box or chest, for carrying the batteries, tools, extra gasoline supply, etc. This should be nicely fitted up inside with partitions to hold

the different articles, so that there will be no jarring or bumping around of these articles when the vehicle is in motion. The holes for carrying the controlling lever shaft brackets, and the steering lever bracket, are shown and properly located, and may be put in the body before attaching it to the vehicle, if desired, but the writer has found it the better plan to leave them out until every part used in this connection is ready to be put in place, when the holes can be easily located. No mistakes are liable to occur by doing work in this manner. Two loose covers are shown in the seat portion of the body, one of these is used

portion of the body provide access to the motor, ignition mechanism, valves and carburetter. They are provided with slats, as shown, to further aid in cooling the motor, as, when the vehicle is in motion, a current of air will be caused to pass under the platform in front of the body, around the motor and out through the slatted openings in the rear. The slats shown in the front or dash portion of the body are only "dummies," and are used only for appearance's sake—to take away the flat effect of the front, which the front will have, if these merely ornamental adjuncts be omitted.

Figs. 62 and 63 show the front and

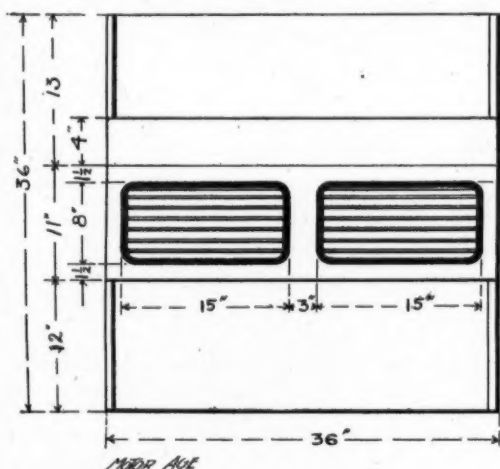


Fig. 62.—Front Elevation of Body.

to provide access to the water tank in order to fill it, and both are very useful, to aid in inspecting the mechanism and also to admit light to the machinery, when it may be necessary to adjust some of the parts from the rear. A loose cover is also provided in the extension portion of the body, back of the seat. This is fitted with a brass wire screen of No. 24 or No. 36 mesh. This permits the hot air to radiate from the motor and also affords a convenient opening through which to inspect the operation of the motor, to see that everything is working properly before starting. The lubricators can also be readily filled by removing this cover.

The doors in the rear of the extension

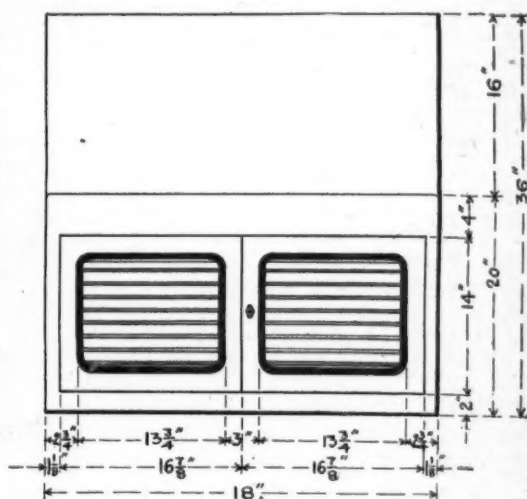


Fig. 63.—Rear Elevation of Body.

rear views of the body, showing the raised panels with the slatted openings which, as before stated, are only dummies in front, but are actually open work in the raised panels in the doors at the rear of the extension portion of the body. The panel work on the sides of the body should be about 1 inch wide and $\frac{1}{2}$ an inch high, and is of oval section. The circular panel, on the side below the seat, may be left blank, or a monogram or crest put in as shown, but the panel itself should not be omitted as it improves the appearance of the body wonderfully, and has the effect of appearing to shorten the length of the body.

Fig. 64 shows a plan view of one end of the front axle, showing the steering

knuckle lever and connecting rod, as well as the front spring blocks. The hubs are also shown and dimensioned. The front axle is $1\frac{1}{4}$ inches in diameter in the hub at the ends next to the steering knuckles. The connecting rod should be made of

bolts from the jaw and giving the jaw a half turn or more, as may be required, when the wheels will again be brought true.

The knuckle proper and steering lever should be made of a steel forging, while

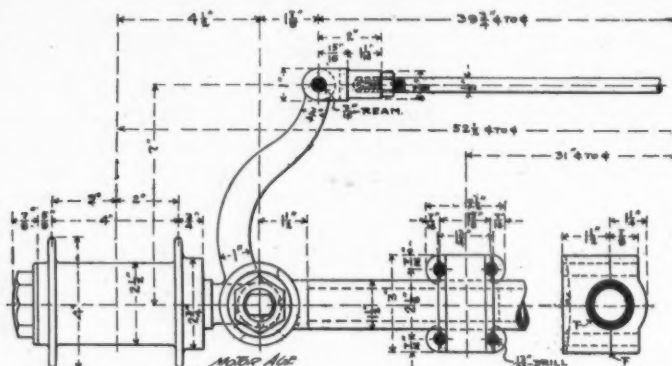


FIG. 64.—FRONT AXLE, SHOWIN HUB, STEERING KNUCKLE, LEVER, CONNECTING ROD AND SPRING BLOCK.

1—Complete.

$\frac{1}{2}$ -inch cold rolled or drawn steel, the jaws or end pieces made of $1\frac{1}{4}$ -inch square steel, and the spring blocks from malleable iron or semi-steel. The writer has found it the better plan to build up this rod instead of making it in one piece from a forging. It is not any more expensive, and allows of very close adjustment of the wheels, not only in assembling the mechanism but afterwards,

the knuckle jaw is a steel casting brazed into the axle. The stub end should extend not less than 6 inches into the tubing, so as to be within the spring block, and slightly past it as shown. The front axle, itself, is made from $1\frac{1}{2}$ -inch cold drawn steel tubing, with a $\frac{1}{4}$ -inch wall. The clips to hold the springs in place in the spring block, are $1\frac{1}{4}$ inches wide and $\frac{3}{8}$ of an inch in diameter and of round section through the spring blocks.

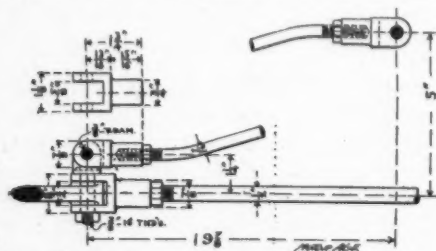


Fig. 65.—Steering Rod, Jaws, and Connecting Pin.

1—Complete.

as the sudden jolts and blows to which the front wheels are subject has a tendency to stretch the connecting rod, unless made unnecessarily heavy, and, consequently, to cause the wheels to get out of parallel with each other; but by this construction they can be very readily and quickly realigned by removing one of the

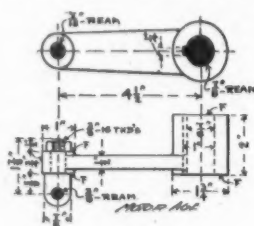


Fig. 66.—Lever.

1—Cast or Semi-Steel.

They can be made from $\frac{3}{8}$ -inch square steel, turned up in a lathe on the ends to the proper length and afterwards bent to shape by the blacksmith.

Fig. 65 shows the steering rod, which connects to one of the two steering levers upon the knuckle portion of the axle. This is made from 7-16-inch, cold rolled or drawn steel, and has a jaw on either end

made from $1\frac{1}{4}$ -inch square steel. Both of these jaws are alike, so only one is dimensioned. The pin in this end of the connecting rod is made as shown in this figure, with an extension head to which one of the jaws of the steering rod connects. The other pin, at the opposite end of the axle, has simply a plain flat head, as indicated by the dotted line below the steering rod jaw, in this figure.

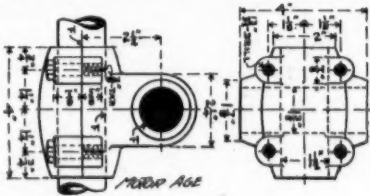


Fig. 67.—Front Axle Swivel Bearing.
1—Cast or Semi-Steel.

The distance between the centers of the hubs and connecting rods and the dimension of the rods and jaws are all clearly given in Figs. 64 and 65, so that no difficulty will be experienced in making the steering connection. The lever which operates the steering device, and which is attached to the shaft or spindle, is carried in a bracket underneath the platform of the body (Fig. 2) is shown in Fig. 66, and should be made from cast or semi-steel, and needs a pattern, of course. The swivel shank in the eye of the lever is

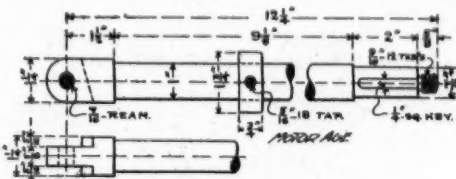


Fig. 68.—Steering Lever Shaft.
1—Steel.

made from $\frac{3}{8}$ -inch square steel and fits into the upper jaw of the steering rod shown in Fig. 65. This swivel shank, as well as the pins in the ends of the steering levers, should be made nice working fits in the holes in the ends of the levers.

The front axle swivel bearing is shown in Fig. 67. It requires a neat pattern, and should be made of cast or semi-steel. The lower half, or cap, is held in place by four $\frac{3}{8}$ -inch cap screws as shown. In boring out the $1\frac{1}{2}$ -inch hole in the swivel

of the axle, after planing the two parts, and drilling and tapping the holes for the $\frac{3}{8}$ -inch cap screws, liners of thick tin should be placed between the halves, before bolting together, so that, after the hole is bored out in the lathe, it will be a clamping fit upon the front axle. The $1\frac{1}{2}$ -inch hole should be a nice working

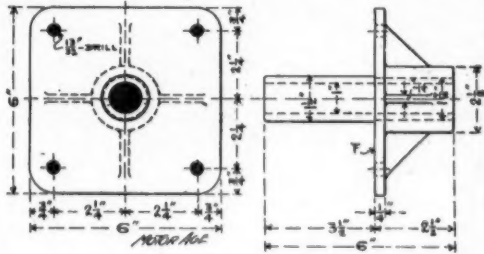


Fig. 69.—Steering Rod Bracket.
1—Bronze, with Steel Sleeve.

fit for the swivel stub in the front of the frame (Fig. 5).

Fig. 68 shows the short shaft or spindle which carries upon its lower end the steering lever shown in Fig. 66. This should be made from $1\frac{1}{4}$ -inch, square steel as shown. It needs a collar of steel, and a $\frac{1}{4}$ -inch, square key, nicely fitted into the $\frac{3}{8}$ -inch part of the shaft. The steering lever (Fig. 66) is held in place upon this part of the shaft by a 9-16-inch hexagon nut, which goes upon the 9-16-inch, 12 thread, as shown.

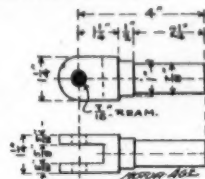


Fig. 70.—Steering Handle Hub.
1—Steel.

The bracket which carries the shaft just described, is shown in Fig. 69, and is made of a brass or bronze casting, with a steel tube or sleeve driven into its hub. This sleeve forms a guide for the aforesaid shaft and prevents it binding, as would be the case if the bearings were very short, and also gives a lighter and stiffer bearing than if made of the same material as the bracket. This sleeve is made from a piece of $1\frac{1}{2}$ -inch cold drawn tubing, with a $\frac{1}{4}$ -inch wall,

cast steel, and the holes for the $\frac{5}{8}$ -inch bolts slotted as shown. This is for the purpose of adjusting the chains upon the sprocket wheels, and is sufficient for even a $1\frac{1}{4}$ -inch pitch chain, if it should be used, instead of the 1-inch pitch for the sprockets which are shown, as it only

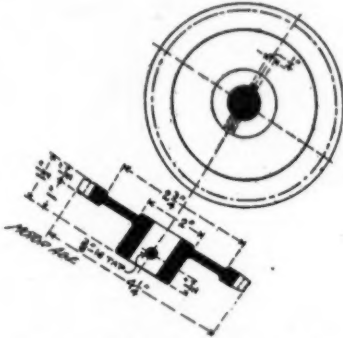


Fig. 74.—Driving Sprocket Wheels.
2—Steel.
12 Teeth—3 82-100 Pitch Diameter.
1-inch Circular Pitch.

needs one-half the pitch of the chain to take out one link. This would, therefore, for a $1\frac{1}{4}$ -inch pitch chain, need only $\frac{5}{8}$ of an inch adjustment, and consequently $\frac{3}{4}$ of an inch is ample, and to spare. The hole in the bearing brackets into which the axle goes, is slotted, as shown, and provided with a nut and bolt

for the purpose of holding it tightly upon the axle.

Fig. 72 shows the lock nuts for holding the driven sprocket wheels upon the hubs of the rear wheels; these should be made of cast steel or phosphor bronze, faced on one side only, and bored out and cut 3 7-16-inch, 12 threads, one right and the other left hand, to fit up the threaded portion of the hub, provided for the purpose.

The driven sprocket wheels which go up the hubs of the rear wheels are clearly shown in Fig. 73. A very nice pattern should be made for them. The arms or spokes should have a flat oval section. The fillets in the corners of the junction of the arms to the rim and center should be large as shown, so as to avoid cracks in the casting, which are almost sure to be found, if this is not done, especially with a cast steel casting, such as is needed here, although phosphor bronze may be used if desired. The hole is bored out and threaded $3\frac{1}{8}$ -inch, 12 threads, to go upon the hubs of the rear wheels, and should be cut one right and one left hand to match the thread upon the hubs.

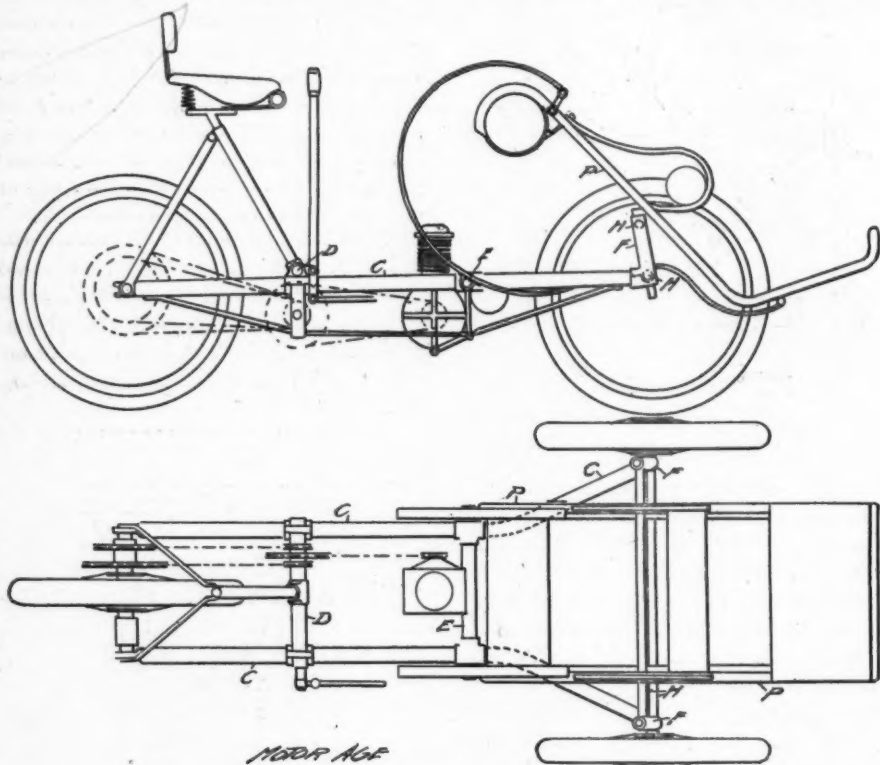
The driving sprockets which go upon the secondary shaft are shown in Fig. 74. These may be made from steel castings or forgings may be used, if desired. Both sprocket wheels are figured for 1-inch circular pitch chain, $\frac{1}{2}$ an inch wide.

THE WEEKLY PATENT OFFICE BUDGET

THREE INVENTIONS DESCRIBED—SPUR GEAR TRANSMISSION AND SPEED CHANGING DEVICE
—TUBULAR FRAME FOR THREE-WHEELER—TRACTION BY ONE WHEEL

But three motor-vehicle patents have been granted during the last two weeks, and none of these presents great novelty.

This invention relates specifically to the construction of a motor tricycle frame whereby the frame work of the



JACKSON'S MOTOR TRICYCLE FRAME

The patent granted to Louis Renault of Paris for a speed changing mechanism represents more mechanical ingenuity than the others of the group, although rather more reliance is placed upon springs in the operation of the parts than is generally considered good practice.

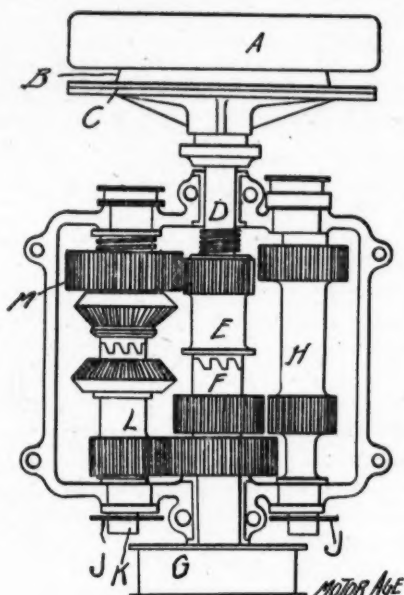
MOTOR TRICYCLE FRAME

Letters patent No. 660,192, dated October 23, 1900, to Ralph Jackson, Altrincham, England; frame for gasoline motor tricycles. Two claims allowed.

front seat is adaptable to support two gasoline reservoirs for the engine.

The main frame work comprises two side tubes C C which extend from front to rear and are connected by two cross tubes D E. The forward ends of the tubes C C are inclined outwardly and on the extremities of these inclined end portions are the steering knuckles of the two front wheels. A pair of cross tubes, respectively between the upper and lower ends of the two steering knuckles, brace the front end of the frame. The front seat frame comprises a pair of bent tubes

P, supported upon springs which are attached to the lower stay H and to the projecting ends of the cross tube E. The upper ends of the tubes P are so curved that they afford a convenient support for



Plan of Renault's Gear

a cylindrical fuel reservoir, and attached to each tube P is a bent rod forming support for one end of another cross-wise cylindrical fuel tank and also acting as a side arm for the front seat, which will be formed of suitable upholstery suspended between the two reservoirs.

The steering knuckles are supplied with the usual link operating gear. The arrangement of the motor and appurtenances and the form of the light frame supporting the operator's saddle, are clearly shown in the illustrations.

RENAULT'S VARIABLE GEAR

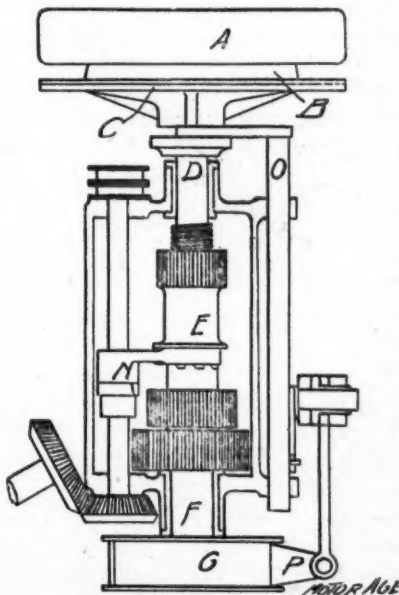
Letters patent No. 660,924, dated October 30, 1900, to Louis Renault, Paris, France; transmission device. Five claims allowed.

In this transmission mechanism the inventor supplies three forward and one backward speed. The gear box is placed on a longitudinal driving shaft running to the differential of the rear wheel shaft of the vehicle. The motor is preferably

located at the forward end of the longitudinal shaft, its shaft and fly-wheel being concentric with this shaft.

The motor fly-wheel is represented in the accompanying illustrations by A and the longitudinal drive shaft by D. The fly-wheel is mounted on a ball clutch ring to which is connected the hand crank mechanism for starting the motor, it being taken for granted that the latter is of the internal combustion type. The utility of this ball clutch ring is obvious. When, in starting the motor, an explosion occurs and the shaft with its fly-wheel commences to rotate faster than the hand operated starting ring, the fly-wheel will over-run the ball clutch and the operator can conveniently cease manipulation of the starting device at the suitable time.

The driving connection between the motor fly-wheel and the longitudinal drive shaft is through a friction cone B which is adapted to engage a corresponding recess in the face of the fly-wheel. A spring flange C on the cone, B, en-



Section Through Renault's Gear

gages the face of the fly-wheel when the two are being brought into engagement, and thus accomplishes a slow, progressive, slipping drive before the cone B and the fly-wheel become quite rigidly en-

gaged. A foot pedal mechanism (only partially shown in the accompanying drawings) operates both the frictional driving clutch and the brake band P on the sheave G in such a manner that when the driving clutch is disengaged through the shift O the brake will be set.

Splined on the driving shaft D is a pinion E whose hub engages by notches a loosely mounted hub F carrying two pinions. A spring back of the pinion E keeps it normally in engagement with the hub F. The brake drum G is rigidly affixed to F, and from it runs the continuation of the driving shaft to the rear axle differential, two universal joints being interposed between the end portions of this driving shaft continuation in order to compensate for relative displacement of the front and rear members of the running gear.

When the pinion E and the gear hub F are in normal engagement the vehicle is, of course, driven directly through the shaft D. A fork N, actuated by a suitably arranged shaft, cam and operating rod mechanism is employed to separate E and F when it is desired to drive through other of the transmission gears.

Mounted on eccentrically disposed shafts (one respectively on each side of the shaft D) are the rigidly connected gears on the hub H and the clutch connected gears L and M. At each side of the clutch between these gears is a bevel pinion, each pinion being rigidly connected to its respective gear, and interposed between these bevel pinions is a fork (not shown in the illustrations) to separate the clutch. The standard of this fork carries a third bevel pinion which engages the other two when the fork is pressed downward to separate the clutch members. The interposition of this pinion is the means for furnishing a backward drive.

Returning to the gears on the eccentrically mounted shafts, these are normally held out of engagement with the pinions on the central shaft by spiral springs J J. The cam and operating mechanism, to which reference was made in connection with the clutch between E and F, is supplemented by a shifting

device whereby, according to which way the operating handle is turned, either the gear M or one of the gears on the hub H will be brought into mesh with the pinion E as soon as E and F are disconnected.

If the gear on H be brought into driving connection with E, the motion will be transmitted to the hub F through the engaging gears on F and H respectively and the vehicle will thus be driven at a reduced speed on account of the proportions of the transmitting gears. If, on the other hand, gear M is brought into engagement with E, and the clutch between it and L is in engagement, the vehicle will be driven at a still further reduced speed through the gear L and its meshing gear on the hub F. If, while the vehicle is being driven through the slow speed gear set, the operator presses down the foot pedal which operates the separator of the clutch between M and L, previously described, the separation of these two gears and the concomitant interposition of the bevel pinion set will effect a back speed drive.

The invention includes several details and minor features not described.



HICKS' FIVE-WHEELER

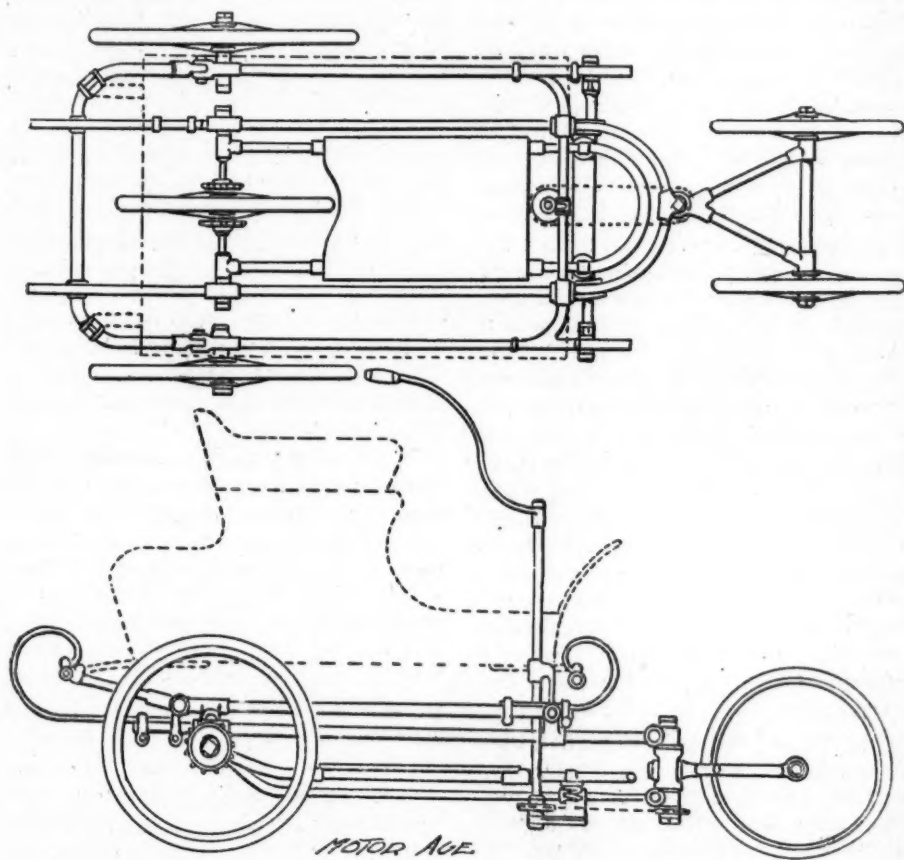
Letters patent No. 660,258, dated October 23, 1900, to Bohn C. Hicks, Chicago, assignor to the Hicks Motor Cycle Co., same place; motor-vehicle with fifth wheel for traction. Six claims allowed.

Mr. Hicks has been experimenting for some time with motor-vehicles running on four independent wheels and driven by a single traction wheel flexibly mounted under the running gear frame, and his vehicle has been previously described. This patent relates particularly to the two-part frame used in the Hicks vehicle.

The vehicle body is mounted upon a rectangular frame of tubing whose rear portion is inclined upward. Springs at front and rear connect the body to it. The forward end of the body main frame rests upon a supplementary frame, being attached to it by loose sleeve connections which allow the two frames to oscillate relatively to each other. The

rear portion of the body or upper frame is supported by the two rear wheels, each of which runs on an independent stub axle. The under frame projects ahead of the upper or body frame, and at its extremity is furnished with a vertical pivot which acts as steering head for the

to the rear end of the upper frame, and the cross member at the rear of the under frame is the axle of the driving or traction wheel, which is located in the longitudinal center line of the vehicle. It is obvious that the tension of the spring connection between the rear ex-



PLAN AND ELEVATION OF THE HICKS MACHINE

two steering wheels, which are carried ahead of the steering knuckle by means of a triangular frame. The connection between the steering knuckle and the wheel frame is a horizontal pivot to allow vertical oscillation of the steering wheels. A spring extension from the rear end of the under frame connects it

to the rear end of the upper frame, and the cross member at the rear of the under frame is the axle of the driving or traction wheel. About midway between the upper and lower side reaches of the under frame is secured an auxiliary frame having a platform or other suitable support for the motor and attachments.

CLEVELAND-NEW YORK RECORD SMASHED

New York, Nov. 5.—Alexander Winton, with T. C. Collins as a companion, arrived at Madison Square Garden at ten o'clock last night from Cleveland after a remarkable ride that broke all previous Cleveland-New York, and, in fact, all American long distance records.

The run was made in 3 days 20 hours. The actual riding time was 38½ hours. The distance from Cleveland to New York is 700 miles, but the chauffeurs went fully 100 miles out of their course through twice getting on the wrong course.

Mr. Winton has made three rides from Cleveland to New York. The fastest of these was made in five days elapsed time, and 47 hours actual riding time. His present run, therefore, beats his former one by 28 hours elapsed time and 8½ hours actual time.

The chauffeurs left Cleveland at two o'clock Thursday morning. The route was via Erie, Buffalo, Geneva, Syracuse, Utica, Schenectady and Albany, thence down the east bank of the Hudson to New York.

They reached Darien, thirty miles, east of Buffalo, the first day, a distance of 252 miles in 12 hours of actual riding time. Here they rested until 10 o'clock the following morning by reason of the heavy storm they encountered.

Friday's run was to Syracuse, almost impassable roads being encountered part of the day. During Saturday's run down the Mohawk Valley the roads were but little improved. They got to Schenectady Saturday night, a distance of 120 miles in 7½ hours of riding.

The final stretch to New York was begun at 6 o'clock Sunday morning. Of course they got good roads in the main and at times are said to have run 30 miles an hour.

Mr. Winton declares he had no trouble at all with his vehicle and the now

doubly famous car is a part of the exhibit in the Winton booth.

NEW MOTOR TRICYCLE RECORDS

News comes from France of the breaking of tricycle records. On October 24, Baras, after three attempts, in each of which his motor was found wanting, succeeded in making new records from every kilometer from the third to the fourteenth, inclusive. The fourteen kilometers were covered in 11:25 2-2, or 12-5 seconds inside the existing record. At this point the motor again refused to work and further attempts on the records were given up.

On the following day Demester was more successful. He started for the 100-kilometer record and succeeded in breaking it. His time for the 100 kilometers was 1:27:44 2-5 against Beconnais' old record of 1:30:49 1-5; he did the 50 kilometers in 41:43 1-5 against the old record, also Beconnais', of 43:23; and in one hour he covered 71-265 kilometers as against the old record of 69.369 kilometers.

BOSTON PARK RULES MODIFIED

Boston, Mass., Nov. 3.—Through a new regulation adopted a few days ago by the Boston park commission, the parks have been opened to a much greater degree to the automobile. This has come about because Boston's park system was laid out over territory covered by many roads and streets, and over these streets and traffic roads the control of the commissioners is tenuous. The park regulations for autos now read thus:

"No person shall run or operate a motor vehicle of any kind on the public parks or boulevards until he shall have been examined and certified as competent by the inspector of the park department and a permit issued on such certificate;

nor until such vehicle shall have been inspected and a certificate of approval issued by the inspector of the park department and a license for the operation or use of such vehicle has been granted; nor unless such vehicle bears the number of its license in Arabic figures not less than two inches in height, in a conspicuous manner on the rear of said vehicle, and not less than one inch in height on the lamps of said vehicle.

"No person shall run or operate a motor vehicle on the public parks between the hours of 11:30 a. m. and 8 p. m., except upon the traffic roads, boulevards and highways, or to gain access by the shortest way from the nearest street to a house fronting on the parkway."

The exceptions made in the last paragraph make it possible for the driver with his license to travel somewhere on a "traffic road, boulevard or highway" in the parks at all hours and the park board has even gone so far as to color a map in its office in such a way as to show the driver who may take the pains to inspect it just where he may go at all hours and where he is forbidden to go between 11:30 a. m. and 8 p. m. These excepted ways permit riding from the limit of the parks to the city, either over park roads or roads bordering the parks, over which ways the commissioners admit they have no control.

Boston is peculiar in the matter of parks. Almost every year sees new territory added to the city's domain, while outside the city limits, the metropolitan park commission is grabbing land right and left, until many wonder whether the whole Eastern part of the State will not soon be one great park. This is all good for the automobilist, who sees that sooner or later the splendid macadam throughout all these parks will be thrown open to him.

The process of inspection by the inspector, T. A. McDermott, is not a rigorous one. The fee is but a dollar. The applicant must take Mr. McDermott out for a ride in the vehicle to be inspected. The latter watches the operation of guiding and handling the carriage and also satisfies himself that the vehicle itself

is safe for use in the parks. If he is satisfied, he fills out two certificates, one for the carriage and one for the driver, stating that he has examined both and recommends that a license be issued. On the strength of these the commissioners issue the permit, giving the vehicle a number. Over fifty licenses have been issued to carriages and about 100 to drivers, since two or more drivers may wish to use the same carriage.

NOTES FROM GERMANY

Berlin, October 18.—What might have been a nasty accident occurred to Prince and Princess Henry of Pless last week, when they were showing some of their English friends the beauties of Silesian landscape and driving in the neighborhood of their country home in their motor car. On taking a corner, a horse and cart suddenly dashed into them, upsetting the automobile and throwing the occupants out violently. Luckily they all escaped with little more than a severe shaking.

The Russian motorist Orlovsky, who arrived in Paris on his tricycle on October 1, speaks very highly of the German roads. His route ran via Posen Schwebrin, Berlin, Magdeburg, Minden and Cologne in Germany, so he had sufficient chance of sampling the "chaussees" of the Fatherland.

The Leipzig automobile show opens on October 19 and closes on the 23rd. On the first day of the exhibition a ride from Dresden to Leipzig is to take place and several very fine prizes have been offered; the German Automobile Club has presented the committee with a gold medal to be given to the absolutely fastest vehicle and the honor of being able to secure the title of "the speediest" will surely engender much competition among those starting.

The Mid-European Motor Vehicle Association gathered at Dresden during the time from September 29 to October 1, and several interesting motions were down for debate, culminating in Herr von Miller's motion to withdraw from the German Automobile Association, be-

ing unanimously accepted. The cause of this retirement is the fact that several of the regulations of the respective corporations clash and neither party is prepared to make advances, although the G. A. A. after accepting the M. E. M. V. A. as a member ought to have insisted on the affiliated body's altering its statutes in accordance with those prescribed by the G. A. A. The next general meeting of the M. E. M. V. A. takes place in Munich. The proposed general tour to Dresden was rather a fizzle, as nobody turned up at the rendezvous in Berlin and Meissen, but all preferred to take their own time and route.

The Viennese motorists will have to fix a plate bearing the number of their vehicle on their motors very shortly, as the police have petitioned the governor to pass a rule enforcing this. The reckless driving of a certain heedless section of Viennese motorists has brought matters to this pass.

The Rhenian Automobile Club, of which Baron Scarisbruck is a prominent member, is arranging a series of time trials on the Mannheim to St. Ludwig (near Basle) route, 540 kilometers. Baron Scarisbruck has announced his intention of being the first man to go over the route and will then challenge all members of the German Automobile Association to improve his time. The holder of the best time at the end of 1901 will receive a gold medal—rather a distant period to look forward to for reward.

Only five German cars were imported into England in July, whilst 43 Americans made their way into the British Isles.

A motor show, arranged by the German Automobile Club, is under consideration for May, 1901. If it is arranged it will be on a much larger scale than last year's exhibition and last from a month to six weeks.

The Paris-Berlin motor race is looming large on the horizon and the presence of Count Talleyrand in Paris has been the occasion for arranging of the preliminaries. Both parties, the German Automobile Club and the Automobile

Club de France, are very much inclined towards the project and the generosity of the German Emperor in granting a sum of \$10,000 for prizes has been regarded as a moral guarantee that the race will come off. Either May or June have been chosen for the event, which will be the most important ever arranged.



HUNTING IN A MOTOR VEHICLE

J. E. Blodgett of Minneapolis is an enthusiastic hunter and an enthusiastic chauffeur, as well. Recently, in company with his wife, he made a trip from the Flour City across Minnesota to a point near Wheaton, in the western part of the state, where he has a "shack" which he occupies during the shooting season. The trip to the shooting grounds was marred by bad weather, but, despite this, the 233 miles were made in three days. The return trip, however, was made under favorable conditions and occupied from 7:30 a. m. one day to 2 p. m. the next day. Mr. Blodgett says that shooting prairie chickens from the seat of the auto is an experience which no hunter should miss.



PENNSYLVANIA CLUB CHARTERED

Philadelphia, Nov. 5.—On Thursday last application was filed in Court of Common Pleas No. 4 for a charter for the Pennsylvania Automobile Club. The main purpose of the organization, as set forth in the application, is the "encouraging and promotion of automobilism and the cultivation of the study of machinery used in motor vehicles among the members and others; increasing proficiency in operating the same; encouraging the betterment and improving of public roads and highways; fostering a general interest in automobiles and for promoting social intercourse among its members and the maintenance of a club house."

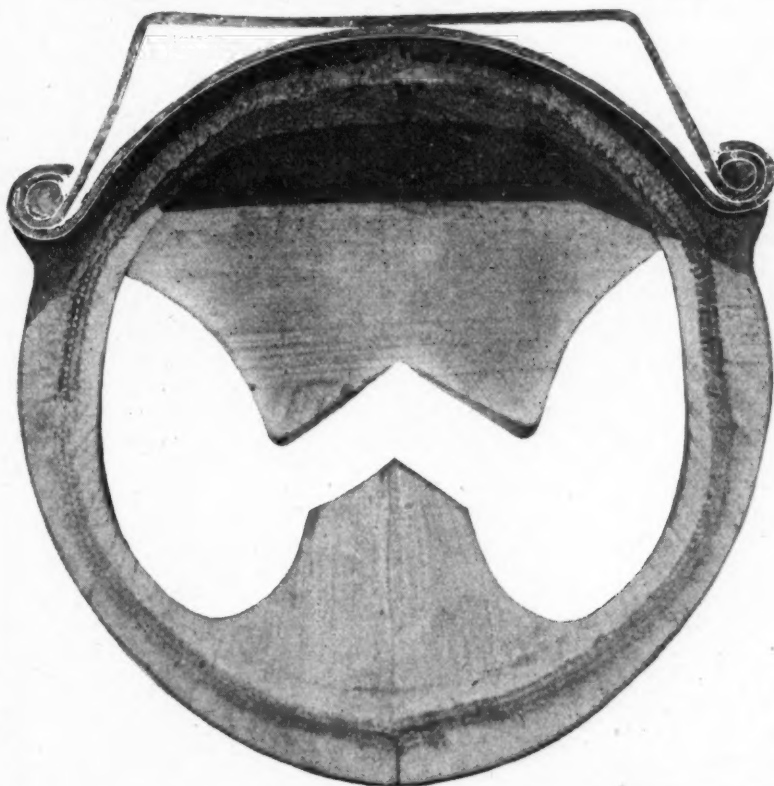
The election of officers resulted as follows:

President, F. L. Sweany; first vice president, Julian Haugwitz; second vice president, Charles L. Klauder; secretary, Henry J. Johnson; treasurer, Charles E.

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Wright; directors, in addition to the above, Robert P. McCurdy, William F. Rudolph, D. W. Webster, Charles S. King and George E. Gossler.

On Friday evening last President Sweany held a reception at his residence, 1700 Tioga street, to which all the members of the new organization were invited. Shortly before nine o'clock nearly a score of machines of all descriptions had lined up before the president's domicile. Music, dancing and a supper enabled the participants to spend a profitable evening, the score or more of ladies present each receiving a souvenir in the shape of a small silk flag combined with the club colors, while each gentleman was presented with a miniature "auto" as a memento of the occasion.

AN AUTO FOR ELECTRIC LIGHTING

Did it ever occur to you to think of using an automobile for illuminating purposes? asks a writer in Cleveland Town Topics. There is something so unique about the idea as to be positively daring and I'll venture the assertion that E. W. Moore is a pioneer both in its conception and its application. Mr. Moore's handsome residence out in the neighborhood of Willoughby is lighted by electric lamps, the current for which is taken from the Painesville car line, and of course when the machinery at the railway power house is shut down for the night the house is left in darkness; or would be but for the ingenious contrivance that Mr. Moore has rigged up. This consists of a mechanism that is so arranged that with the stopping of the current from the railway wires, a switch in the Moore house is automatically thrown, so as to completely cut off the connection with these wires, and it is thrown far enough so that a new connection is immediately established with wires leading to Mr. Moore's automobile in the barn; and the automobile, equipped with a storage battery, furnishes current for lights during the remainder of the night. It's a great scheme and Mr. Moore says no family should be without it.

NOTES OF INTEREST

The city solons of Hartford, Conn., have decided to purchase an auto patrol wagon.

An automobile truck line is to be formed to operate between Los Angeles, Pomona, Ontario and Chino, Cal.

An elaborate automobile and cycle show is being arranged to take place in the Grand Palais des Champs Elysees, Paris, in January.

While the two recently formed automobile clubs of Brooklyn are discussing the subject of consolidation, there are rumors of the founding of a third organization.

Columbia College has an automobile club with twelve members. The members believe that automobile racing is bound to become an important feature of inter-collegiate sports.

Seventy-five automobile cab drivers of Chicago have organized themselves into a labor union, known as Local Branch No. 59 of the International Brotherhood of Electrical Workers.

W. W. Blaker and his bride have added still another feature to the "automobile wedding" by spending their honeymoon in an automobile. They are travelling from their home in Mankato, Minn., to New York City in their horseless carriage.

E. H. Martin, the president of a Webster City (Iowa) telephone company, has purchased an automobile for the use of one of his linemen and intends to extend the use of the auto to all linemen. Saving of time is the cause for the change.

The action brought by the City of Philadelphia against Mr. Jules Junker, under which he was fined for driving an automobile in Fairmount Park, before that pleasure ground was generally opened to automobilists by the park commissioners, was dismissed on appeal.

The great interest taken in automobiles by the public generally is being taken advantage of by the advertising expert of a patent medicine concern. "Reading notices" purporting to deal with automobiles and ending with a recommenda-

NOTICE!

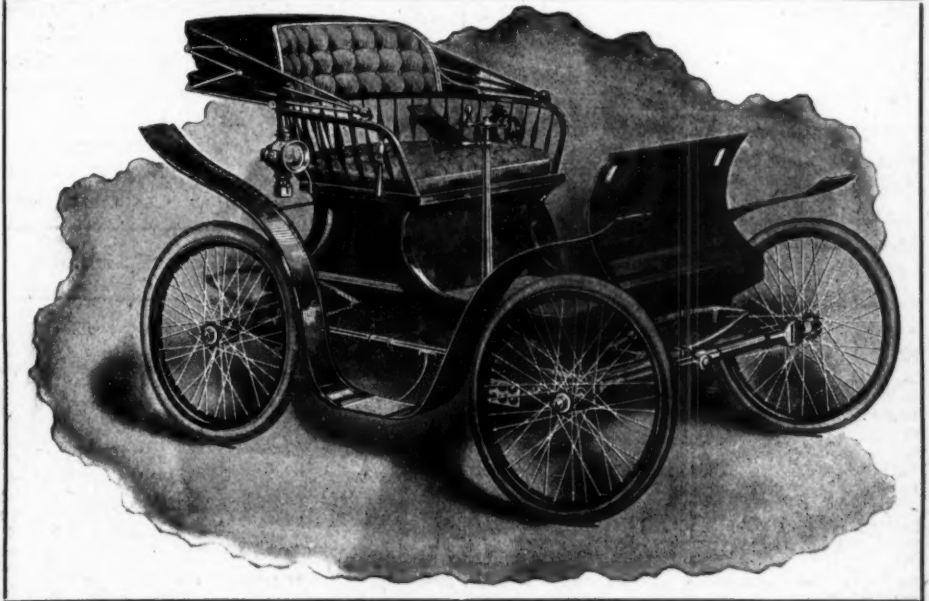
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tion to use So-and-so's stomach bitters are seen in country papers in all parts of the United States.

A London letter to the Indianapolis News calls attention to the fact that 100,000 horses perished in the South African war and in that fact the correspondent sees a potent reason for the success of the motor vehicle as a military adjunct.

New York dispatches tell a story of the wild excitement that was caused by unsuccessful attempt of a train to beat "Willie" Vanderbilt's automobile. The auto, says the dispatches, "made the train look like a vegetable cart drawn by an elephant."

Automobiles have proven so successful for pacing ambitious bicycle riders in their attempts to break records that a newspaper man now proposes the use of motor vehicles, provided with big wind shields as pacemakers for trotting horses, predicting that the trotting record would, in this manner, be brought below 2 minutes.

MISCELLANEOUS

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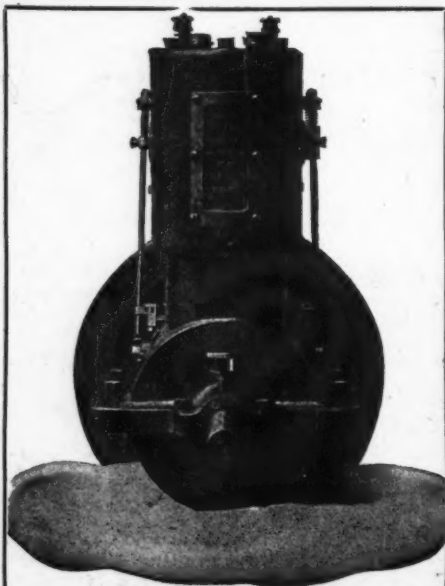
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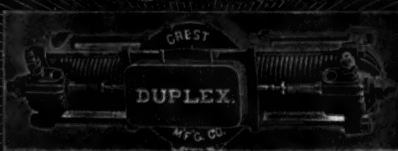
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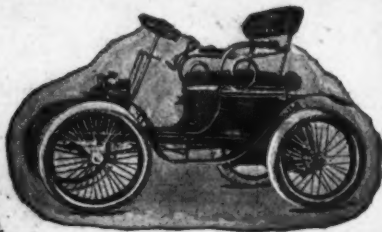
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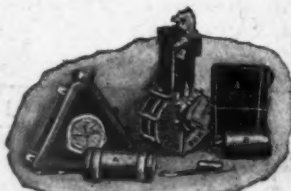
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We are pleased to announce to our customers and to the public generally, that we are now prepared to deliver Willard Automobile Batteries with moderate promptness. Our factory has operated day and night for nearly two years, during which time we have been constantly behind our orders. Owing to greatly increased facilities both in the way of more extensive room and largely increased machinery, we can now take care of orders with satisfactory promptness. 1600 Willard Automobile Batteries now in use in the U. S.

SIPE & SIGLER,

CLEVELAND, OHIO



**AUTOMOBILES
BIKE WAGONS
... BICYCLES**

The Diamond Rubber Co.
Factories, AKRON, OHIO.

BRANCHES:

215 West 53rd Street, - New York City.
7½ Appleton Street, - Boston, Mass.
451 Wabash Avenue, - Chicago, Ill.

THE NAME SEARCHMONT IS A GUARANTEE



**500 VEHICLES WILL BE
READY FOR SPRING DELIVERY**

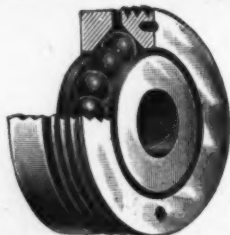
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**"WAGONETTES"
"AUTOCYCLES"**

SEARCHMONT MOTOR CO.
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FOR MOTOR VEHICLES

GET
OUR
CAT.



IT
TELLS
YOU

THE BALL BEARING CO.
BOSTON, MASS.

AUTOMOBILE SUPPLIES FOR THE TRADE

Batteries. Our special set of DeDion Dry Batteries put up in protecting case with connections made. Is the only reliable dry battery. Will operate without fail 200 hours or 3500 miles. Price per set, complete, \$10.00.

Sparkign Plugs. The genuine DeDion Ignition or Sparkign Plugs give reliable service for the jump spark and have the only porcelain that will stand the heat of the explosive chamber. Price, \$2.00 each.

Motor Oil. Our Special Motor Oil will give the best results in DeDion and other motors. Is a special blended mineral oil, free from all animal and vegetable compounds, prepared and sold only by our company. Quarts, 50 cts. One-half Gallon, 75 cts. Gallon, \$1.25.

Send all orders to Gen'l Office and F'ry, DE DION-BOUTON "MOTORETTE" CO.
Church Lane and 37th Street, Brooklyn, New York

FIRST ANNUAL
NATIONAL
AUTOMOBILE
EXHIBIT
AT THE
Chicago Coliseum

March 23-30, 1901

FOR DETAILS ADDRESS _____

THE MOTOR AGE

Monon Building

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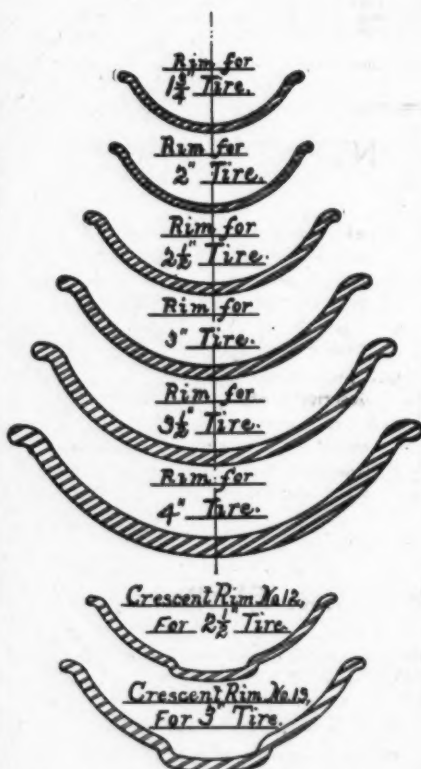
EVERYTHING IN
SPRING STEEL

RIMS

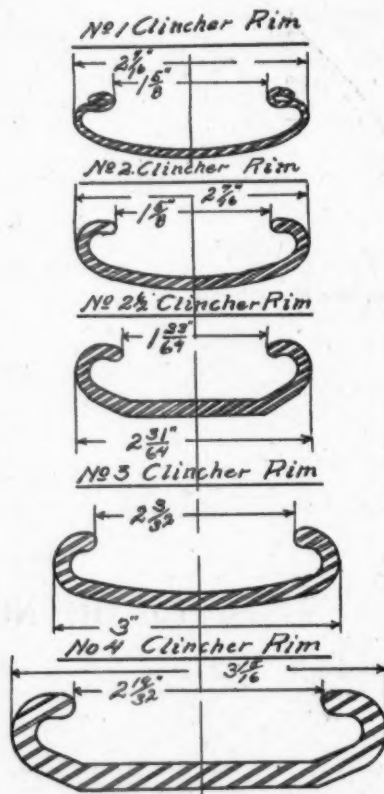
FOR SINGLE TUBE
AND
CLINCHER TIRES....

EXTRA STRONG and TRUE with SPOKE HOLES DRILLED and COUNTERBORED to SUIT
Cut shows in half size a few of our sections.

Crescent Rims.



Clincher Rims



IN USE BY ALL LEADING AUTOMOBILE AND PNEUMATIC TIRE CARRIAGE MAKERS

"Brass-Lined," Anti-Rust, Safety "Clincher" Tubing
FOR AUTOMOBILE MAKERS.

All sizes and cut to lengths furnished in sets to order.

THE WILMOT & HOBBS MFG. CO.

Hot and Cold Rolled Steel Mills and Factories and Main Office at BRIDGEPORT, CONN.

NEW YORK OFFICE, - 258 BROADWAY.

(Established 1877)